EH & FA Lays Down Rigid Rules Governing Time Purchasing Plan

Editor's Note: The following is reprinted from a pamphlet issued by the Electric Home & Farm Authority and is explanatory of the finance plan for TVA-approved appliances.

THIS article describes the time payment plan of Electric Home and Farm Authority, Inc. (EHFA) for the purchase of electric appliances. The plan provides lower rates and longer terms than previously have been available.

The full program involves an utterly new approach to the whole problem of distribution and financing of electric appliances and the adjustment of rates for electricity. The major objective is a lessening of the burdens in the home and an increased efficiency on the farm through the greater use of electricity.

One of the first functions of the EHFA has been to convince electric utilities and appliance manufacturers that the way to increase appliance sales and the use of electricity is to reduce appliance prices and electric rates below prevailing levels, depending upon volume to bring a statisfactory profit to both.

As another function of the program, EHFA will undertake, through educational work throughout the territory of its operations, to increase the demand for electric appliances and to bring about a greater usefulness of electricity for the householder and the farmer.

Some utilities in the territory have adjusted rates to a point where electric current for appliances can be obtained at prices below their previous rates. These utilities have further indicated their willingness to assist in collecting instalments on appliance sales at a low cost.

A considerable number of appliance manufacturers, large and small, have signified their belief in the program and have indicated a willingness to cooperate to the fullest. Many dealers have been consulted and have signified both their desire to cooperate in the program and their belief in the possibility of obtaining, through the program, a much larger volume in sales at a satisfactory profit.

The program does not favor any manufacturer. All established manufacturers, operating in conformity with NRA, who wish to and who can meet provisions as to quality and price, may participate. It does not favor any utility.

It is equally open to all dealers. All dealers able to meet the necessary requirements will be eligible to participate. Every dealer is on the same footing as every other dealer and every utility merchandise department. Electric appliances will continue to be distributed through existing channels.

EHFA is not a manufacturing or a merchandising organization. It is interested only in promoting and financing sales of electric appliances to make electricity more generally available. It will seek to bring about cooperation among the electrical utilities and electric appliance manufacturers and the dealers as to rates and prices with a view to accomplishing the widespread purchase and use of appliances at fair profits to all.

To best accomplish the purpose of this plan, complete cooperation must be had among:

Consumers,
Retailers,
Manufacturers,
Utilities.

To accomplish this end advisory committees will be formed consisting of representatives of each of the above and a representative of EHFA. It will be the function of these committees to review the operations of the plan and to suggest improvements.

It shall be the purpose of EHFA, through the activity of these committees, to see that no discrimination exists between any of these groups.

Time Purchase Plan

Electric Home and Farm Authority has approved for financing certain electric appliances, manufactured to a standard of specifications established by the Authority. The manufacturers are authorized to place on these products the TVA emblem.

EHFA will finance time payment sales of emblem appliances where retailers have been approved under the Authority's plan.

Retailers wishing to obtain approval under the plan will apply to manufacturers of emblem appliances. EHFA will inform the dealer of his approval as a retailer under the plan and will indicate the makes of appliances for which this approval is given. Dealers will be notified also as to the amounts in which they are approved to operate under the plan.

With their application, retailers will sign the standard form of EHFA contract by which the retailer agrees to buy back, upon default, purchaser contracts sold by him to the Authority.

Because of the low financing charges it will be necessary to remove dealers from approved lists if they fail to comply within ten days after a request by the Authority to repurchase a contract.

EHFA has made arrangements with a group of electric utilities in the Tennessee Valley area by which these utilities will cooperate under the plan. Since purchasers desiring to take advantage of the finance plan will be billed along with their monthly electric bill, the finance program will be limited to sales to purchasers served by electric utilities cooperating in the program.

Approved dealers may obtain without charge purchaser contract forms and chart of time-payment charges by application to EHFA. These forms and charts may be obtained also from the nearest cooperating utility.

EHFA will not buy any purchaser's contract unless it is on the Authority's forms and unless the contracts comply with the latest EHFA chart of time-payment charges.

The purchaser's contract period must be 36 months or less on one appliance, 48 months or less on more than one appliance. The down payment on each contract must meet the requirements set out in the chart of finance charges. The monthly payment must be not less than $2.00. The price at which the appliances were sold must be not more than the manufacturer's suggested retail price approved by EHFA.

Purchaser contracts will be presented by the retailer to the utility, which will forward them to EHFA. The utility is authorized in most cases to pay the retailer immediately for contracts so tendered. In other cases, the utility is required by EHFA regulations to forward the purchaser's contracts to the Authority before making payment to the retailer.

For example, if a retailer has presented no contracts for 30 days, the utility must forward the contract to EHFA before paying the retailer.

The retailer will be paid the cash-sale price of the appliance, less down payment and less any instalments due on or before the date the paper is accepted by the utility for the Authority. Down payment and any such instalments will be retained by the dealer.

A retailer may elect to carry his own EHFA paper but if he sells any such paper to EHFA he will be required to offer to EHFA all EHFA paper thereafter taken by him until he has given 30 days notice that he intends to carry his own EHFA paper. A retailer will not be permitted to sell any EHFA paper to anyone else unless each contract is first offered to EHFA.

EHFA will not generally record contracts. Retailer may record contracts for his own protection.

The instalments due from the purchaser will be payable at the utility's office and the utility will be expected to pursue substantially the following procedure with reference to collections:

Purchaser will be sent a notice of the instalment due along with his regular monthly bill for electric service. If the instalment is not paid within 10 days, the purchaser, within the following 10 days will be sent a delinquent notice, and a second delinquent notice will be sent to purchaser with his next regular monthly service bill if the instalment is still unpaid. If the instalment remains unpaid 40 days after first notice was sent to the purchaser, a collector, within the following 10 days, will be assigned to contact the purchaser.

If the instalment remains unpaid for 50 days from the date when the first notice was sent to the purchaser a notice of purchaser's delinquency will be sent to the retailer. If the account remains unpaid at the end of 60 days from the date when the first notice was sent to the purchaser, demand will be made on the retailer to repurchase the contract. EHFA may call on the retailer to repurchase the contract prior to that time as provided in the retailer's contract with EHFA. Retailer will not, without consent of EHFA, repossess any appliance until he has repurchased the contract from the Authority. Retailer's cooperation will be expected in collecting accounts which are not paid 50 days after the sending of the first notice to purchaser.

Approved retailers will be permitted to use the EHFA insignia in advertising, subject to the Authority's rules and regulations.

EHFA expects to cooperate with retailers, manufacturers, and distributors, through advertising, education and demonstrations, or such other means as deemed advisable, to promote the wide distribution of electric appliances.

Retailers may apply direct to EHFA for any information or assistance they may need in operating under the EHFA plan.

How to Operate Under The EH & FA Plan

1. Make application for approval on EHFA application form (either direct or through distributor or utility) to each manufacturer whose approved appliances you desire to sell.

2. *Upon notice of approval from EHFA, obtain from utility (at no cost to you) purchaser contract forms and EHFA chart of finance charges. Contracts on other than Authority forms will not be accepted.*

3. Negotiate your sale, obtaining as large a down payment as possible. (See chart of time payment charges as to requirements of down payment). Follow carefully instructions in filling out purchaser contract forms. Only forms completely and properly filled out will be accepted.

4. *Purchaser's credit statement must be filled out in full. Send in any other information on purchaser which leads you to believe purchaser a good credit risk. It is recommended that delivery be withheld until full information is obtained and you are confident that purchaser is acceptable. You may make inquiry of utility for any credit information it may have available.*

5. Make sure that purchaser is using electric service of a utility which is cooperating under the EHFA plan; that the appliance is to be installed in a residence for domestic use; and that the price charged to purchaser does not exceed the manufacturer's suggested retail price approved by the Authority.

6. *Make sure that the time payment charges conform with the EHFA rate chart; that the contract term is not over 36 months if for one appliance, or 48 months if for two or more; that the monthly instalment is at least $2.00 on each contract; and that the down payment meets the requirements stated in the chart of time payment charges.*

7. When you are sure of acceptability, get signature of purchaser on contract, making certain that the purchaser understands fully the terms of the contract, and deliver the appliance.

8. *Within 30 days, forward the executed contract in duplicate, properly assigned by you, to the office of the utility where the purchaser's bill for electric services is payable.*

9. If you have any reason at any time to feel that action against the purchaser is necessary to save Electric Home and Farm Authority or yourself from loss under this plan, please communicate promptly with utility and with the Authority. Retailers are to report monthly to EHFA their sales for the previous month, on forms supplied by EHFA.

Inspecting a TVA Model

Visitors to the showing of TVA-emblem appliances at the Electric Home & Farm Authority show in Tupelo, Miss., look over a refrigerator.

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ELECTRIC REFRIGERATION NEWS

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Electric Cooling To Be Tested in Research House

Illinois Professors Report Air-Conditioning Tests At Urbana, Ill

By John T. Schaefer

CHICAGO—Home cooling by mechanical refrigeration is the next research project to be undertaken by the research residence at the University of Illinois where several important contributions to the technique of air conditioning have been made with research programs sponsored by the American Society of Heating & Ventilating Engineers and by the National Warm Air Heating & Air Conditioning Association.

That a study of mechanical refrigeration for cooling the university's seven-room house is to be next was announced here last week at the mid-year convention of the National Warm Air Heating & Air Conditioning Association at the Stevens hotel. Refrigeration compressors and remaining equipment needed to cool the house are now being installed, and it is expected that results of this summer's work will be available for the December meeting of the association.

The convention last week was primarily a meeting of the warm air furnace industry, with practically all furnace manufacturers represented

(Concluded on Page 10, Column 1)

19,015 Commercial Cases Sold During 1933 by CRM Members

CHICAGO—The tabulation shown below gives estimated sales of commercial refrigerator cabinets, display cases, and coolers by members of the Commercial Refrigerator Manufacturers Association during the year 1933. The sales figures for various classifications of industry products have just been received from Paul H. Sullivan, executive secretary of the association.

Top Display Cases		
A. New	4,600	$1,840,000
B. Used & reconditioned	1,400	280,000
Double Duty and Floor Cases		
A. New	4,950	2,879,000
B. Used & reconditioned	1,650	320,000
Sectional Coolers		
A. New	1,760	1,024,000
B. Used & reconditioned	800	160,000
Portable or Reach-in Type		
A. New	2,125	490,600
B. Used & reconditioned	480	47,000
Total	**17,765**	**$7,031,000**
Special Construction	1,250	625,000
Total Net Sales	**19,015**	**$7,656,000**

Dixie Club Dealers Will Cooperate with EH&FA

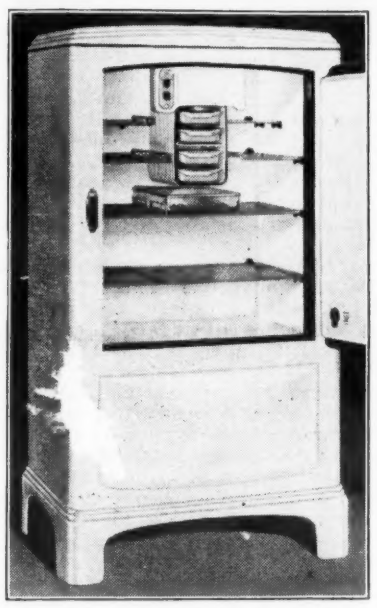
CHATTANOOGA, Tenn. — Electric Home & Farm Authority was assured the cooperation of the Dixie Club, group of Southern wholesale dealers in electric appliances, at a meeting held June 13 in Chattanooga. The meeting was attended by a special committee of the Dixie Club and representatives of the EH&FA.

Nine wholesalers in Alabama, Georgia and Tennessee, market area of the EH&FA program, attended the meeting. The following resolution was adopted after George D. Munger, commercial manager of EH&FA, and Henry Edson, EH&FA consultant, had discussed EH&FA plans with the committee:

"Resolved, That we express our appreciation to Mr. Munger and Mr. Edson for their clear explanation of the objects of the EH&FA and their plans for attaining these objects, and that we assure them of our cooperation to the extent of our ability in assisting them in the promotion of sales of electric appliances in the territories served by our members."

The following firms were represented: Mills & Lupton Supply Co. of Chattanooga and Knoxville; James Supply Co. of Chattanooga; General Electric Supply Co. of Chattanooga, Atlanta, Knoxville, and Nashville; Graybar Electric Supply Co. of Atlanta, Birmingham, Knoxville, Florence and Nashville; Matthews Electric Supply Co., Birmingham; Moore-Handley Hardware Co., Birmingham; Stokes Electric Co., Knoxville; Westinghouse Electric Supply Co., Atlanta, and Mayer Electric Supply Co., Birmingham.

The New Apex



Standard model in new Apex line showing cabinet styling labeled as giving a "massive" effect.

* * *

Apex 1935 Models Have Refined Units

CLEVELAND—Apex Electric Mfg. Co. has just introduced its 1935 line of household electric refrigerators featured by a styled cabinet, new compressor series, and a special temperature control on the deluxe models.

Prices start at $114.50. The line is split up into two series, a "standard" series including four models and a deluxe series comprising three models.

Cabinets in both series are nicely styled, with a beveled top and leg structure, combined with thick door panels, giving a "massive" appearance to the cabinets. Hardware on the deluxe models is semi-modernistic, torpedo shaped.

Standard models are equipped with a single-cylinder condensing unit incorporating many new improvements. Deluxe models have a two-cylinder compressor, which is entirely new in Apex household models. A rubber-mounted 1/6-hp. Apex motor of new design powers the compressors.

The new "Normatic" cold control has nine selective freezing speeds and automatic reset from either the defrosting or fast freezing position.

Other features of the deluxe series are a door opening foot pedal, service tray, tinned dairy and bottle rack, self-closing ice compartment door, and all-porcelain hydrator.

Other features included in both lines (with the exception of the $114.50 model) are Shelf-X shelves with diamond mesh, section of bottom shelf hinged to make extra room for storage of large bottles, automatic indirect lighting of interior, centrally located all-porcelain evaporator, and one rubber ice cube tray.

Advertising by 'Bargain' Dealer Checked in N.Y.

Newspapers Censor Copy Placed by 'Warehouse' Type of Dealer

NEW YORK CITY — Regulations placed by New York City newspapers on electric refrigerator advertising in their classified sections, aimed at barring misleading statements made by the "warehouse" type of dealer, have recently been broadened to cover both classified and display advertising, according to announcements made recently by advertising departments of metropolitan dailies.

This regulation was brought about by the action of the Refrigerator Association of New York, Inc., which organization includes all but two distributors of electric refrigerators in the metropolitan area.

Principal restrictions placed on advertising include the following:

When prices of new refrigerators advertised are mentioned, quantities and prices must be included and the advertiser must be able to show a bill of sale.

Use of the following terms is not acceptable: warehouse, storage, discount, finance, bankrupt, forced liquidation, to be sold without limit or reserve (unless used in conjunction with an auction sale, repossessed, finance company's repossession.

Storage and auction sales can only be advertised when proof can be furnished that they are bona fide.

The term "guarantee" can be used only when the advertiser gives the name of the guarantor.

Arthur Callahan, managing director of the Refrigerator Association of New York, Inc., originally brought the problem of such advertising to the attention of the classified advertising managers of New York newspapers. Said Mr. Callahan in his communication to the advertising departments.

"Until about a year ago legitimate mechanical refrigerator distributors were not appreciably affected by the selling methods of the second hand dealer. Recently, however, more aggressive and more unethical second

(Concluded on Page 12, Column 2)

Nema Division Opens Offices in Detroit's Penobscot Bldg.

DETROIT—Effective Monday, June 18, the offices of the Refrigeration Division of National Electrical Manufacturers Association (Nema) will be located at 1106 Penobscot building, here, it was announced last week by G. M. Johnston, president of Universal Cooler Corp. and chairman of the Refrigeration Division.

Promoted by Kelvinator

S. V. ALLTMONT

* * *

Alltmont to Manage Kelvinator Liquid Cooling Division

DETROIT—S. V. Alltmont has been appointed head of Kelvinator Corp.'s newly created liquid cooling division, it was announced last week by J. A. Harlan, commercial sales manager.

Mr. Alltmont's new position involves the supervision of the merchandising of all Kelvinator and Temprite water coolers and beverage cooling apparatus sold by Kelvinator distributors and dealers.

Prior to his appointment Mr. Alltmont had been in charge of Kelvinator's water cooler division. He joined Kelvinator in January, 1932.

Temprite Introduces 2-Temperature Valve

By John T. Schaefer

DETROIT—Temprite Products Corp. of this city has started production of a new two-temperature valve for control of temperatures in forced convection cooling units, bottle coolers, ice cream cabinets, soda fountains, storage type water coolers, or wherever a suction pressure regulating valve is required.

According to H. B. McLaughlin, chief engineer of the company, this new model 700 valve can be used with practically any commercial cooling unit operating in a multiple installation at a temperature higher than that for which the compressor is set.

Thus it is applicable to a restaurant installation in which a single compressor is used to operate an ice

(Concluded on Page 12, Column 4)

Frigidaire Will Market $77.50 Unit in August

New Model Will Have Lid-Type Door on Top And Sealed Machine

DAYTON, June 19—(Special Wire to ELECTRIC REFRIGERATION NEWS)—Introduction of a small electric refrigerator that uses a low amount of electricity and makes it possible for persons in the lowest income brackets to have in their homes modern means of food preservation was announced today by Frigidaire Corp., subsidiary of General Motors Corp.

The new refrigerator is a radical departure from conventional design models, the announcement by E. G. Biechler, Frigidaire president, stated, in that the door opens upward rather than from the front outward. Its retail, delivered, and installed price will be $77.50, plus freight charges.

Retooling operations already have been begun in Frigidaire's Moraine plant and production will be started shortly, Mr. Biechler said, with deliveries to field distribution points starting in August.

Of 2-cu. ft. food storage capacity, the new model answers the refrigeration requirements of the family that heretofore has been unable to afford modern methods of refrigeration, Mr. Biechler declared.

In designing a low-priced model that operates economically, he said, Frigidaire is definitely broadening its

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Wages of Salesmen Considered by NRA

WASHINGTON, D. C.—The several NRA boards are now engaged in making a study of the facts obtained at the May 24 hearing on the plea advanced by representatives of commission salesmen for a minimum wage, according to Kenneth Dameron, deputy administrator, NRA distributing trades section.

At the hearing representatives of manufacturers of major electrical appliances spoke in opposition to the plan for fixing a minimum rate of payment, claiming that such a step would lead to the discharge of great groups of salesmen.

This, declared representatives of commission salesmens' groups, would not be true. The only persons who would lose jobs would be the incompetent, "floater" type of salesman.

One of the representatives for the commission salesmen at the hearing was Samuel Untermeyer, famed New York attorney.

John Dryer, president of the National Council of Traveling Salesmen's Associations, predicted unionization and even more radical action if the salesman is not recognized in codes of fair competition.

Joel Berrall, NRA labor adviser, suggested a minimum wage of $15 a week for salesmen or $3 a day and expenses for the man who works full time only on certain days.

Crosley Bottle Cooler Features 'Dual Tub'

CINCINNATI—Crosley Radio Corp. is introducing a new "Kool-Rite" bottle cooler which sells for $117.50 f.o.b. Cincinnati and which replaces the original "Kool-Rite" bottle cooler introduced last year.

Feature of Crosley's new bottle cooler is a "dual tub" arrangement which allows for both wet storage and dry storage refrigeration in one compartment.

This arrangement allows different temperatures to be maintained in two compartments, carbonated "soft" drinks being cooled in the wet storage and beer in the dry storage. The dry compartment also serves as a handy place for candy, foodstuffs, etc.

Refrigeration is supplied by a Crosley ¼-hp. unit placed on a frame on the bottom of the cabinet. The unit plugs into any 110-120 volt, 60-cycle light socket.

The new "Kool-Rite" has a capacity for 120 12-oz. bottles or 6 cases of 6 oz. bottles.

The unit is equipped with a cold control which allows change of refrigerating temperatures to meet conditions.

Elston D. Herron Finds Des Moines, St. Paul & Minneapolis Dealers Optimistic Despite Agricultural Situation

That song about Iowa being the state "where the tall corn grows" wasn't exactly in tune with the times when we stopped in Des Moines two weeks ago to talk with business men. The corn was putting up a stiff fight against the drought, but it wasn't growing very tall, and pastures were a sorry sight.

Iowans had not, however, lost all faith in the weather man, and they didn't think their farms and their businesses were going completely to the dogs. But they had passed the stage of poo-pooing the drought.

Illustrative of both that faith and that worry was a front-page item carried one day while we were there by the Des Moines *Tribune*. It was a yarn told a *Tribune* newshawk by a Drake university professor.

"It's an old story," read the item, "supposed to have originated in an Iowa homestead cabin one winter night in the eighties. Among the group around the fire was a settler who had gone out to Kansas, and to Nebraska, and to Texas. Drought had driven him back to Iowa. The settler was asked to tell the difference between Iowa country and the others.

"'Well, there ain't really much difference. The people are about the same, the soil is black, and you can grow wheat in all of them.'

"Some in his audience then asked him why he had come back to Iowa.

"'Well,' the settler began, 'there is one thing different, all right. In Iowa about 15 minutes before everything is going to hell, it rains. In the other places, it don't.'

"And the Drake professor added Monday: 'It seems right close to the 15 minutes now.'"

Since we left Des Moines, we have heard that Iowa has had scattered rains, and almost a deluge at Council Bluffs. All that moisture must have helped some, but the state will need a lot more to bring its corn crop up to par and make pastures green again.

The pasture situation, incidentally, was worrying Iowans a lot more early in June than the corn crop. The corn, they said could go another two or three weeks without rain. But pastures were gone, and farmers' children were herding stock along the roads. Much stock had been sold at sacrifice prices, and the need for water was becoming acute. Several Des Moines truck owners were hauling water to the farms nearby, selling 8,000 gallons for $2.

Most small grain had been entirely destroyed by the drought, and the first hay crop had amounted to almost nothing. Farmers were saying, however, that if rain came soon, there would be enough forage in a second crop to get most of their stock through the winter.

From Russell J. Newell, retail sales manager of the A. A. Schneiderhahn Co., Des Moines Leonard distributor, we got an explanation of why some business men in that city are not as worried about the effect of the drought as those living in other parts of the state—particularly if they have only a retail operation.

"Des Moines is the Hartford of the Midwest," he said. "Its population is only 150,000, yet there are 45 insurance companies of various kinds with home offices here. They employ many people, and neither the companies nor the employes are dependent for their incomes on local conditions; their money comes in from all over the country; their spending power isn't actually lessened very much by a poor outlook in their immediate vicinity.

"Those employes keep merchandising in Des Moines pretty active in times like these, for two reasons: They are good prospects themselves. And the money they spend circulates among other people, making *them* good prospects.

"That isn't all. Des Moines is also quite a convention city. Every few weeks the year around there's some

(Continued on Page 2, Column 1)

DES MOINES DEALER NEWS

(Continued from Page 1, Column 4)

sort of a big meeting going on here, and that brings money into the community."

Sales Manager Newell hastened to add, however, that he was not trying to make out that Des Moines is drought-proof. His sales record shows that to be untrue. May sales were only two-thirds as large as in April.

"Even so, I think that sales drop resulted from a mental condition induced by the drought, rather than from any material effects it had on spending power," he commented. "Des Moines people are very much in sympathy with drought sufferers, and that tends to clamp pocketbooks a little tighter.

"Dealers in outlying towns, who depend more directly on the farmers, are the ones hit hardest by the drought. Farmers are a far-sighted lot: when they see a hard winter coming, they don't buy anything but what they have to. City folks are different—they talk a lot about conditions, but keep on spending their salaries just the same."

Mr. Newell came March 15 from Los Angeles to handle Schneiderhahn's retail department, and since that time has almost completely reorganized it. First thing he did was take on an entirely new selling force—men who had never sold refrigeration before. He said he wanted men who *couldn't* talk about competitive makes, who would have to limit their presentations to what they had learned about Leonard.

Each of the 10 salesmen has his own car, and is required to make 10 canvass calls a day. His big job is to *interest* prospects in Leonard, then either bring them to the showroom where Mr. Newell can help with the closure, or take the sales manager back for order-signing proceedings.

Salesmen receive 14 per cent on all deluxe models they sell, and 12 per cent on standard models, even when the sales are on the meter plan, which Schneiderhahn's began using last year. No attempt is made, we were advised, to convert meter prospects into contract buyers, but about 25 per cent of all persons buying Leonard on meters ask, in from 60 to 90 days, for the privilege of making remaining payments on the instalment plan.

First five months' retail business this year tripled sales of the corresponding period for that department last season, and topped last year's total retail volume, according to Mr. Newell.

About his methods of handling salesmen, the manager had this to say: "No adverse criticism is ever pointed at any one man during a sales meeting. When a sales manager starts figuring he is a little better than the men under him—and shows it—his organization will go to pieces."

Hieb Can't Keep Crosleys in Stock

Herbert Hieb, head of the Hieb Distributing Co., Crosley wholesaler, wasn't worrying so much about the drought when we called as about lack of stock. He had back orders from his 220 dealers for more than 600 units, and had just one refrigerator in the warehouse.

"My heavy order season started March 1," he told us. "By March 15 I was having trouble getting stock, and I've had it ever since. I could easily use 500 boxes a week, and I'm getting about 100.

"Small towns in my territory have suffered more from the drought than key cities, because dealers in the former are more directly dependent upon farmers for business. But I think my sales this year will be about equally divided between small-town and key-city outlets.

"Only during the last three weeks has the drought become a factor in my dealers' business. A good rain or two, even if it did not revive crops a great deal, would change Iowans' state of mind and give general business a grand boost."

Mr. Hieb thinks his setup on refrigeration service is a humdinger. He describes it this way:

"I have just one service man here at headquarters, and only six of all my dealers are equipped to do a first-class service job.

"For $7.50, we will completely rebuild a Crosley unit, and guarantee it for one year. That offer holds for any time during the nine years following expiration of the one-year factory guarantee. It costs us about $4.60 for a rebuilding job.

"We do major service work for all but the six dealers I mentioned, the dealers paying shipping charges in and out of Des Moines. We have less shop equipment than any distributor's service department I know of. That's because the Crosley machine is so simple."

Furniture Stores Advertise Meter Plan

Most of the refrigerator advertising done in Des Moines this season has been on the meter plan, this distributor told us. Three large stores are using it—Younker's department store with General Electric, Grunow, Norge, and Crosley; Davidson's furniture store with Frigidaire, Stewart-Warner, Grunow, and Crosley; and Ginsberg's furniture store with Kelvinator and Westinghouse.

A good percentage of local refrigeration business has gone to these outlets this year because of their meter offers, and some small refrigeration dealers have suffered because of it, opined Mr. Hieb.

As far as advertising is concerned, dealers in Des Moines have a pretty tough time of it, several people told us. There are two newspapers there, the *Register* and the *Tribune*, both published by the same company, and the only sheets of any consequence in the city. The *Register* is a morning paper, the *Tribune* comes out in the evening.

The two papers are splendidly edited, and cover Des Moines and most other parts of Iowa like the proverbial blanket. In years past, other papers have been started in Des Moines, but could not stand the strong competition for long.

Manufacturers make extensive use of the papers for national advertising campaigns. Distributors find them excellent because the advertisements reach many Iowa communities in which their dealers are located.

But Des Moines retailers object to this: In any local merchant's advertising of a nationally distributed product, such as General Electric or Westinghouse refrigerators, the *national* advertising rate is charged for all but one-fifth of the space used. That one-fifth is charged for at *local* rates.

So dealers have one of two choices. They may advertise their refrigerator in 100 inches of space, say, and pay for 80 inches of it at the national rate and 20 inches at the local rate; or they may give four-fifths of the advertisement to items not nationally distributed, and one-fifth of it to the refrigerator, and so receive the local rate on the entire 100 inches.

That rate policy prevents most small or fair-sized dealerships from doing much advertising on refrigeration, we were told, because they simply can't afford the cost when they are interested only in reaching readers in the Des Moines area.

Westinghouse Business Shows Good Increase

Although the drought was making itself felt by those of its 50 dealers located in smaller towns, refrigeration business of the Westinghouse Electric Supply Co. continued splendidly up to June 1, when a slump occurred, according to G. C. Merritt, branch manager.

The branch was given the same quota this year as last. On May 15, it had sold 187.7 of its quota for that period. On that date last year, it had made 40.8 per cent of it.

Since its season got going late in February, the company has found 4.5-cu. ft. models to be most in demand, said Mr. Merritt, but added he thought he could see a slight trend toward larger models as the season advanced.

Liberal Terms Help Gibson Dealer Sales

New Gibson distributor in Des Moines is the H. E. Sorenson Co., which handled Kelvinator until the first of this year. During each of this season's first five months, the company's unit sales were double those of corresponding months last year, said Mr. Sorenson. Sales began to topple the middle of May, the drought being the chief reason. "If we don't get rain in 10 days, it's going to be too bad for Iowa," was the proprietor's comment.

The company serves 30 dealers and conducts its own retail operation, and this summer has been advertising a selling plan of 10 per cent down and $5 a month on Gibson. There has been quite a bit of competition on ice box trade-in allowances in the city, Mr. Sorenson informed us. He allows $10 or $15 on trades.

"Gibson needs more advertising in this section," he said. "The line is practically brand new in the Iowa territory."

There is, in Des Moines, an association of radio dealers which has made several attempts at handling problems of refrigeration selling, but no great progress has been made in that direction. Dealers there don't hang together any too well, we were told several times.

Minneapolis and St. Paul

Chins were snapping back into place, and smiles that had been a little wan for several weeks were brightening when we visited Minneapolis-St. Paul, Minn. June 5 through 7. The reason: It was raining! Not long, pouring rains, but the sun was staying behind the clouds, and giving thirsty fields a chance to soak up what water did fall.

A long report on the drought in Minnesota would be more or less a repetition of what we found in Nebraska and Iowa, but the following will give you an idea of highspots in the situation on the eve of the intermittent downpours:

Minnesota had placed an embargo on all cattle coming into the state to graze, only stock for slaughter at markets and packing plants being admitted. National guardsmen were on duty at all main highways stopping incoming shipments. The federal government was buying sick or starving cattle from farmers in counties where drought suffering was most acute.

Plans were formulated for movement of stock from farms to the 85,000 acres of the Mississippi wild life refuge in Minnesota, Wisconsin, Iowa, and Illinois, for grazing under federal supervision. Twenty-three counties in Minnesota were organizing emergency relief drives.

Even when some rain began to fall, it was reported that "corn fields were helped greatly, but rains were too late to help small grains. . . that there will be no let-up in the federal-state program of relief through purchase of distressed cattle . . . that the embargo on incoming shipments of cattle was being tightened further by the national guard . . . that the grasshopper menace was growing in some Minnesota areas . . . that the increasing scarcity of water is causing alarm in many places."

But despite the drought, and a truck-drivers' strike May 15 to 26 in the Twin Cities which brought general business there to a standstill, refrigeration sales seem to have gone merrily along. For some dealers and distributors there, this has been their greatest season.

May Best Month in 4 Years for Stuefer

O. F. Stuefer, General Electric distributor in Minneapolis, said, "The drought has not hurt refrigerator sales as yet, but it certainly will if it continues, because its effect will gradually back up into the cities. These short rains we're getting now, though, are mighty encouraging.

"When the truckmen went on a strike here in May, we lost 11 days that would have been as good as two whole winter months. We tried to talk up 'buy now for future delivery' during that period, but prospects held back, because they didn't know how long that strike would hang on. Nevertheless, total sales in May made it the best month we had had in four years. Sales for the first five months of this year were 250 per cent ahead of the same time in '33."

The distributor is elated at the volume of business his 14 commercial salesmen are getting on G-E-Russ beer coolers. When they run into some tough prospects, here is what they say: "Let us install the cooler, and furnish a bartender, with you paying his salary. At the end of six months, you can have the equipment, if you'll give us the savings this job gives you over your old system."

Sales of other types of commercial equipment are rather slow with the G-E outlet, and Mr. Stuefer lays it to the "price consciousness of the Twin-City commercial market."

Many large furniture and department stores in both Minneapolis and St. Paul have been selling refrigerators on the meter plan, but it is our own observation that meter selling has not been as potent a factor there as in some cities this season, and certainly has not caused as much of a hullabaloo among small, competitive dealers.

Mr. Stuefer thinks, however, that meter selling may have done considerable harm in more ways than one. It has put merchandise in the homes of some people who actually could not afford to buy it, and may turn it back later. It has hurt salesmen's morale, because substantial numbers of their orders were rejected by their employers' credit departments.

"I anticipate a 'fire sale' of repossessed refrigerators in the fall, but don't fear it because they will be small boxes which have seen hard service," he remarked.

The trade-in situation in the Twin Cities is, for the most part, well in hand. The G-E distributor opined that about 90 per cent of the trades made in that area were for no more than $5 on a sale of $200 or under, and $10 for sales of more than $200.

He had several interesting little stories to tell us. One was about an installation of 111 Monitor Tops made four years ago in an apartment building at 2615 Park Ave., Minneapolis. Since they were installed, service costs on them have averaged less than one cent per month per unit. Another one: Several weeks ago, a Stuefer salesman took in a seven-years-old 7-cu. ft. Monitor Top on a trade. Shortly after, he sold it for $165.

Power Co. Shifts Promotion to Ranges

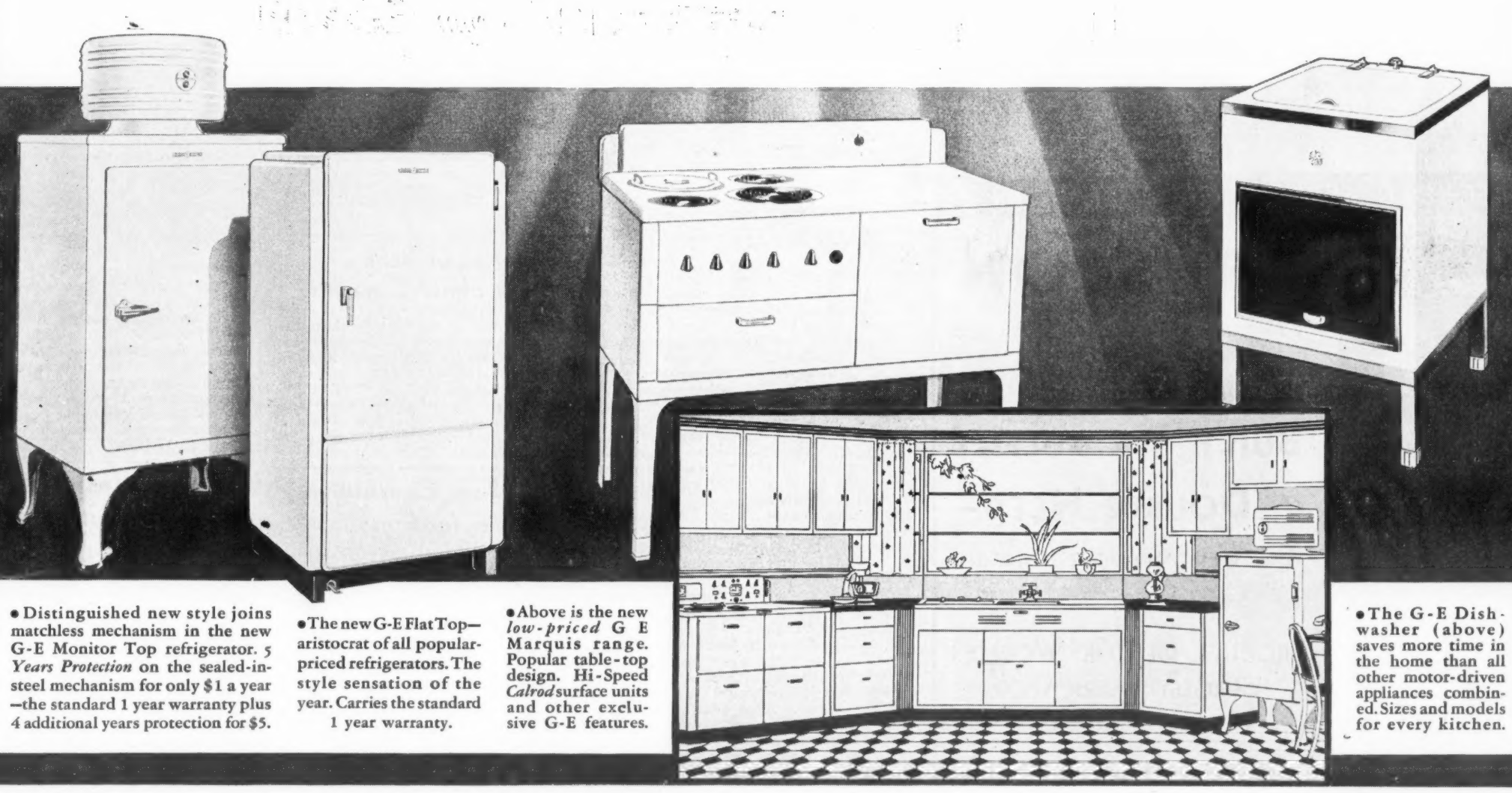
Northern States Power Co., Twin City utility, is beginning to let up on refrigeration selling. It handles Kelvinator, and until this year did an exceptionally strong job of selling it. Now it is putting just a fair amount of effort behind refrigeration, and is turning its big guns on the electric range market. Besides doing much range advertising, it bears the installation and wiring costs on ranges sold by its own men or by local dealers.

We caught H. G. Huey, merchandise manager of the utility, about five minutes before he had to go into a conference, so had little time to talk

(Concluded on Page 4, Column 1)

AUTHORIZED DEALER

the Business with a FUTURE!



• Distinguished new style joins matchless mechanism in the new G-E Monitor Top refrigerator. 5 *Years Protection* on the sealed-in-steel mechanism for only $1 a year—the standard 1 year warranty plus 4 additional years protection for $5.

• The new G-E Flat Top—aristocrat of all popular-priced refrigerators. The style sensation of the year. Carries the standard 1 year warranty.

• Above is the new *low-priced* G E Marquis range. Popular table-top design. Hi-Speed *Calrod* surface units and other exclusive G-E features.

• The G-E Dish-washer (above) saves more time in the home than all other motor-driven appliances combined. Sizes and models for every kitchen.

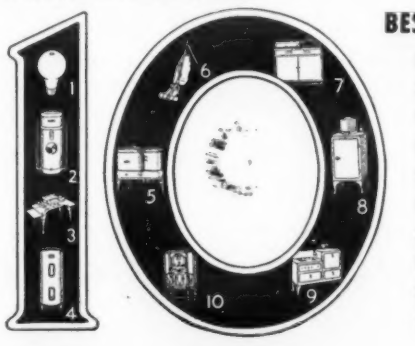
LOUIS G. ELFERS started in a "two-by-four" shack, doing odd wiring jobs, occasionally picking up an order for a new fixture, an electric iron or other appliance. That was back in 1919. Today, G-E dealer Elfers of Muscatine, Iowa, is one of the leading retail merchants of his community, owns an imposing store and display room stocked with General Electric home appliances, has 6 salesmen, does a thriving business that is growing by leaps and bounds.

Yet Mr. Elfer's business success is no more unusual than hundreds of other retailers who started small and are growing big with the General Electric franchise.

General Electric offers the dealer a business with a *future.* A complete line of refrigerators recognized as the standard of excellence and the leader in public preference. A line of companion products, including the G-E Range and G-E Dishwasher to fully equip any home with the complete General Electric Kitchen. And—a still greater opportunity to become the G-E *10 Best Home Servants* dealer—catering to every electrically wired home in the community—offering a *complete* electric home service—representative of the world's largest electrical manufacturer.

You can GROW with the G-E refrigerator franchise!

Write or wire for details. General Electric Company, Specialty Appliance Sales Dept., Section DF62, Nela Park, Cleveland, Ohio.



BEST HOME SERVANTS

G-E Refrigerator
G-E Range
G-E Dishwasher
G-E Water Heater
G-E Clothes Washer
G-E Ironer
G-E Vacuum Cleaner
G-E Furnaces
G-E Radio
G-E MAZDA Lamps

GENERAL ELECTRIC

G-E Playlet Explains Why New $74.50 Refrigerator Won't Compete With Other Lines

Pictures above were taken from the audience during the presentation of a playlet at Nela Park. The skit is all about a dinner party arranged for her former employers by an ex-maid. The ex-maid sets out to prove that—although she'd have a G-E kitchen like that of her former mistress if her husband could afford it—the new combination range-refrigerator really serves the purpose.

TWIN CITY DEALER NEWS

(Concluded from Page 2, Column 5)

about refrigeration. He had been studying some figures on Minnesota rainfall, and gave us some dope on that.

Sixty miles north of Minneapolis, he said, no rain had fallen since last September. The state has not had normal rainfall since 1927, when it totalled 30.19 inches. In 1933 it was 23.65 inches.

News Helped Schaefer Get Started

Don't mention the condition of that section in northern Minnesota to Harold L. Schaefer, Minneapolis Universal distributor and manufacturer of some commercial equipment, if you don't want to hear a mild explosion. He maintains that no one has any business trying to farm up there, anyway. Furthermore, that the drought has given him no cause for worry. Total business of his company's varied departments is 40 per cent ahead of the same time last year.

ELECTRIC REFRIGERATION NEWS had something to do with Mr. Schaefer's start in the refrigeration business several years ago. He was in the automobile business, and decided he might try selling some electric refrigerators, too.

But what kind? Someone suggested he get a copy of the NEWS. He might get some ideas from that. He got an issue, sat down with it, made a list of all the refrigerator manufacturers advertising, then wrote a letter to them asking for their propositions.

Universal Cooler Corp. was the only company which made what Mr. Schaefer deemed a complete and satisfactory reply, so he bought a few household models from them, and started out in refrigeration.

That business has grown until he now has a large retail force selling household and commercial refrigeration equipment, oil burners, electric ranges, washers, etc. in the Twin Cities; he serves 50 dealers in the Northwest territory with his various lines, and has established his own factory for manufacture of ice cream cabinets, bars, beer coolers, soda fountains, and restaurant equipment.

The company employs 165 persons, 45 of them in the factory division, newest product of which is a brineless ice cream cabinet. This fall, it will start production on a line of warm air furnaces for use with oil burners. Mr. Schaefer has just leased another building next to his showroom at 1620 Harmon Place, which will be used for a display of Universal commercial refrigeration equipment and various Schaefer products. The company has 25 service and installation men.

Orders received for ice cream cabinets this year have been pleasing, and surprising, to Mr. Schaefer. He didn't expect any such volume in that field. Ice cream manufacturers have done the bulk of the buying, and indications are that next season will be a very active one in that line, we were told. The company's household refrigeration sales have been only slightly ahead of last year.

Vestal Spends Spring On Telephone

H. D. Vestal has had a trying spring. He has spent a good part of it with a telephone receiver against one ear, for, as sales manager of Reinhard Bros. Co., Norge distributor in Minneapolis, he has had to answer the pleas of many of his 450 dealers for more merchandise and faster deliveries.

"We started falling behind in deliveries about the middle of April," he told us, "and kept running with about 200 unfilled orders until the last of May. Then a few cancellations began to dribble in, and they would have got worse if these rains hadn't started. We are still about 200 units behind."

Price raises, thinks Mr. Vestal, have hurt sales of deluxe models, and boosted interest in standard jobs. Distributors will be forced to turn more attention to standard lines because of insufficient turnover in deluxe models as a result of high prices. That is none too comforting to this distributor, for in the words of A. L. Milner, who works with Mr. Vestal, "small-model sales have already been large enough this year to be disturbing."

The drought, the strike, and inability to make full deliveries all combined in May to slump the distributor's sales somewhat. "We lost momentum," was the sales manager's way of putting it. "Dealer salesmen, and our own field men, slackened up in selling effort because they knew they couldn't promise immediate delivery, and at the same time, dealers were getting discouraged by the drought situation."

It was not just those factors which caused a sales drop, though, added A. C. Reinhard. "Undoubtedly, the public's uncertainty about business and politics the country over tended to slow up buying."

Feature of his dealer setup about which Mr. Vestal is most proud is the fact that of his 450 dealers, only 20 handle some make of refrigerator in addition to Norge.

During the past couple of seasons, he has been culling out some of his dealers in Minneapolis and St. Paul, trying to get a few strong outlets rather than a lot of just-fair ones.

"I'm not in favor of dotting dealers all over a city," he explained. I have only five in St. Paul (all of them exclusive), and nine in Minneapolis. If I had 20 or 25 in each place, there would be too much competition between them, there would be too many to divide up a total season's Norge business, and we at headquarters couldn't direct our advertising to help them as well as we can with a few. This plan may not move such a large volume for a few seasons, but for the long haul I think it is best."

Advance Buying Helped Grunow Sales

The slow-delivery situation this year has not been as hard on the Grunow Northwest Sales Co. (St. Paul) as it might have been if the company had not taken a gamble at the first of this year, and bought an unusually large stock of 6½-cu. ft. Grunows.

Because of that, the distributor has been able to make regular deliveries of that size to its dealers, but has had difficulty aplenty in getting 5½-cu. ft. models, for which there has been considerable demand, according to R. S. Jambor of the sales department.

Business, he told us, was just beginning to get good again after its hold-up by the strike. The company's dealers in southwestern Minnesota haven't, at any time this season, done as good a business as those in other parts of the state. "That is because business was bad last year on account of poor crops, and the dealers were pretty skeptical about striking out aggressively this year," it was explained.

Ordinarily, said Mr. Jambor, the real selling season on refrigeration in Minneapolis-St. Paul takes in only May, June, and July, but this year sales started well in late February, and bid fair to continue nicely until August, provided there is sufficient relief from the drought.

"There seems to be so much more interest in refrigeration this year than ever before. People are showing a great willingness to part with some of their money for electric refrigeration."

With many distributors in the Twin Cities there has been a marked shortage of small models this year—deliveries have been far too slow for the demand, Mr. Jambor said. But shortly before we called, Leonard outlets began to get deliveries on small boxes, and were reported to be doing a big business with them.

Liquidation of Bohn Stock about Complete

On the way to see the Grunow distributor, we stopped at the Bohn Refrigerator Co. which went into receivership July 17, 1933, and into bankruptcy Aug. 26, 1933. From C. W. Albertson, who designed the Bohn unit, we learned that liquidation of stock is practically completed. The plant is standing idle.

Utility Pays Competitive Dealers for Prospects

A number of times during our three days in Minneapolis we heard mention of a refrigeration campaign conducted in the spring by the Interstate Power Co. through various of its branches in the Northwest.

Handling Westinghouse refrigerators exclusively, the utility charged a small down payment, gave 48 months to pay the balance with no carrying charge. Furthermore, it offered dealers of other makes a commission on all sales to prospects turned in by them.

It did a land-office business for several weeks, many of its sales being made to prospects found by dealers of competitive makes. Distributors of the latter, feeling the slump in sales of their own refrigerators, took action of various kinds to curb the drive, and the latter was finally stopped on its original basis, we understood.

The Westinghouse refrigerators were supplied to the Interstate outlets by the Westinghouse Electric Supply Co. of St. Paul, which serves 75 dealers in the Northwest besides the utility branches. Its business for the first five months of this year was 296 per cent ahead of the same period last year, according to E. J. Vergosen.

A good part of the company's sales this season have been made to small-town dealers, he said, and they in turn have reported that middle-class folk have been their main buyers. Those dealers are pretty much in the dumps now, though, because of the drought.

He reported that 5½- and 6½-cu. ft. models have comprised the greater part of sales this season, and said that there is considerably less evidence of fly-by-night makes in the territory this year than last.

Business Men Oppose Governor's Re-election

Twin-City business men are doing some serious thinking this summer about the gubernatorial election in Minnesota this fall. And they will leave no stone unturned, when that time comes, to defeat the Farmer-Labor candidate up for reelection, Gov. Olson.

During the two terms he has served, he has built up a powerful political machine. At the last election, the people of the state voted down a state income tax, but the legislature, under the governor's leadership, later put such a tax into effect.

Now, he proposes to revive an old law by which the state could levy a tax on the goodwill of a business organization. If he is reelected, such a tax may be put through, with the result that some large plants in or near the Twin Cities might move elsewhere.

"There are too few smoke stacks here as it is," some men told us, so they are going out to beat Mr. Olson. Two distributors said they will stump for another candidate, and one declared he would fire anyone in his organization who voted for the present governor. Hope of business men is that there will be a fusion of the Democrats and Republicans in the election.

Los Angeles Girl Wins 'Gibson Girl' Contest

GREENVILLE, Mich.—Miss Dorothy Mae Pierce of Los Angeles has been declared winner of Gibson Electric Refrigerator Corp.'s "Gibson Girl contest," as she was selected from all entrants by Charles Dana Gibson, artist and creator of the Gibson Girl of the nineties, as the "modern Gibson Girl." In a Hollywood theater this week, she will receive $1,422 in prizes.

In the competition, the United States was divided up into four zones. Each Gibson dealer conducted a contest in his own town. Winner of each dealer contest was sent to the regional contest, and the winner of each zone contest received a cash award of $250.

Credentials and photographs of the four zone winners were then submitted to Mr. Charles Dana Gibson who selected Miss Pierce as the winner.

Nothing but HAM!

A butcher would have a hard time satisfying his customers and making a satisfactory profit with nothing but ham. And it is just as impossible for an electric refrigeration dealer to make *any real money* with only one or two models of electric refrigerators.

More and more, dealers are realizing the truth of this which, in a measure, accounts for the large number of dealers who have come to Kelvinator for representation.

Logically, Kelvinator offers a bigger opportunity to make money. There are 17 models in the Domestic line, but that is only HALF THE STORY because Kelvinator also has the most complete line of commercial equipment on the market to-day.

The Kelvinator Commercial line includes water coolers, milk coolers, beer and beverage cooling, ice cream cabinets, air conditioning, oil burners, and cooling and condensing units of types and sizes for every commercial installation.

With Kelvinator, every prospect for commercial electric refrigeration in your city is YOUR PROSPECT. The same is true on Domestic electric refrigeration—and on both Commercial and Domestic you have a sales story that is without equal in the industry.

Now is the time to DO SOMETHING ABOUT IT! KELVINATOR CORPORATION, *14250 Plymouth Road, Detroit, Michigan. Factories also in London, Ontario, and London, England.* NRA CODE

(900)

KELVINATOR

Hartford Range Plan & Kitchen Promotion Wins Coffin Award

ATLANTIC CITY—Hartford Electric Light Co. of Hartford, Conn., was presented with the annual award of the Charles A. Coffin Foundation (established by the General Electric Co.) at the Edison Electric Institute convention here last week.

The Hartford Electric Light Co. introduced the much-controverted plan of promoting electric cooking through a year's free trial of electric ranges, preceded by an offer of 500 ranges at a weekly rental.

It also promoted the all-electric home idea, with the aid of the electric kitchen exhibit of the General Electric Co., with the result that at the end of the year there were 750 all-electric homes in the company's territory.

Summer Sales Drive Announced by Norge

DETROIT—A "summer sales drive" is being planned by Norge Corp. for July and August during which dealers and salesmen in all parts of the country will join in a series of "Cold Cookery Carnivals" and a "Friendship Campaign" to acquaint the American housewife with the features of the Norge.

This sales drive will be introduced in a series of 47 dealer meetings between June 1 and July 18.

Prizes will be awarded to housewives submitting the best cold cookery dishes and recipes; the winning recipes in each locality to be entered in the national contest in which 100 prizes will be distributed. Store promotion ideas will be patterned after the kitchen show events which have been staged by leading department stores this year.

Feature of the "Friendship Campaign" will be an owner-advertising contest, announced through newspaper advertising, in which cash prizes will be awarded to winners who report the most interesting savings and use values. Coupled with this, Norge dealers will institute a "Friendship Testimonial" contest by direct mail, for prizes to be awarded locally.

Norge Vikings and Norsemen (leading salesmen) will participate in a $50,000 "treasure hunt" during July and August, with prizes to be awarded on a point basis.

Dealer meetings which will be held to tell Norge retailers about the sales drive will be conducted by two factory groups, the first captained by John H. Knapp, vice president in charge of sales, who will hold 22 meetings in the following cities: Detroit, Milwaukee, Chicago, Indianapolis, Little Rock, Houston, San Antonio, Dallas, Oklahoma City, Kansas City, Omaha, Denver, Salt Lake City, Los Angeles, San Francisco, Portland, Seattle, Spokane, Billings, Minneapolis, Waterloo, and St. Louis.

Mr. Knapp will be assisted by R. E. Densmore, western sales manager; George Pizarro, Lee Cox, E. R. Lovegren, A. N. Delzeith, J. E. Oliphant, and W. C. Rowles, divisional managers; Dayton Young, sales manager of the washing machine division; Ralph Beale, sales manager of the oil burner division; and Betty Appel, director of home economics department.

The second group, captained by James A. Sterling, advertising and sales promotion manager, will conduct 25 meetings in the following cities: Buffalo, Cleveland, Cincinnati, Louisville, Detroit, Rochester, Syracuse, Albany, Springfield, Boston, New York City, Newark, Philadelphia, Baltimore, Washington, Richmond, Charlotte, Pittsburgh, Nashville, Memphis, Jackson, New Orleans, Birmingham, Atlanta, and Jacksonville.

Mr. Sterling will be assisted by M. G. O'Harra and R. E. Densmore, eastern and western sales managers, respectively; T. P. Hallock, J. M. Tenney, J. E. Oliphant, J. R. Butler, J. R. Blocher, Norge divisional managers; A. D. McCaughna, general manager of the Norge New York branch; Dayton Young, sales manager, washing machine division; Ralph Beale, sales manager, oil burner division, and Miss Joan Vitez of Norge home economics department.

688 Salespeople Attend Cleveland League School

CLEVELAND — Six hundred and eighty-eight electric refrigerator sales people attended the five-week series of sales meetings just concluded by George M. Irving under the sponsorship of the Electrical League of Cleveland.

The meeting were arranged by the Cleveland league to promote better salesmanship of electric refrigerators on the part of dealer and department store sales forces.

The sales people were divided into five groups, according to the make of refrigerator sold. Each group attended a meeting one night a week for the five weeks.

All-Electric Kitchen Must Be Scientifically Planned, and Promoted—A. L. Billingsley

ATLANTIC CITY—A home that was equipped with every conceivable electrical appliance still wouldn't be deserving of the name "all-electric home"—if the installation of the equipment hadn't been scientifically planned. This was the idea propounded by A. L. Billingsley, president, Fuller & Smith & Ross, Inc., Cleveland advertising agency, before the recent convention of the Edison Electric Institute here.

"I live in a house that has an electric refrigerator, an electric range, an electrically operated heating plant, a washer, an ironer, two radiant heaters, an electric clock, two radio sets, two vacuum cleaners, two fans, two food mixers, two irons, a percolator, a coffee maker, a waffle iron, a health lamp, and a vibrator," said Mr. Billingsley. "I ask you, am I living in an electrical home?

"When I put that question to my wife the other night she looked at me in surprise, and answered: 'Why no, I shouldn't say so.'

"When I use the term 'electrical home,' and as my wife understood it, I refer to a home that expresses the newest home-designing thought, with the appliances scientifically planned and built in, with a complete kitchen and laundry, the most modern lighting, and all the other worksavers and conveniences that women have seen and admired in such homes as the Westinghouse Home of Tomorrow in Mansfield and the General Electric one at Nela Park.

"My better half feels sufficiently familiar with such homes that notwithstanding our possession of most every individual electrical appliance—even though our home is lighted according to modern standards, yes, even though our current bills are higher than those of practically any of our neighbors—she does not think of ours as an electrical home. To achieve that ideal we would want to build an entirely new house, throughout which a planned generosity of comfort and convenience and a planned economy of operation would be the outstanding characteristics."

Revolution in Home Building

Mr. Billingsley pointed out that there is one fact that must be recognized, namely, that a revolution is taking place in the ideas that people have held as to what constitutes a modern home.

"Whether or not we, as individuals, approve the strange-looking structures with flat roofs and pent houses that we see at A Century of Progress, or illustrated in the home-building magazines, these and the other new forms which 'home sweet home' is taking have caught the interest of the masses," he said.

"Whether we realize it fully or not, people have come to credit electricity with being one of the chief agencies, if not *the* chief agency, in stimulating these new developments in modern dwellings. Whether a modern home is labeled 'an electrical home' or not, the public expects to find electricity as the major means of supplying most of its advantages for livability."

Electricity, Mr. Billingsley declared, gets the credit for the presence of many of the ingenious new cabinet arrangements in the kitchen, and the non-electrical conveniences in laundry and basement, largely because they have come along as electrical contributions to the home have come along. Yet a checkup on the cost of the electrical equipment in the Home of Tomorrow at Mansfield shows that it does not total 20 per cent of the total cost of that home. It is an electrical home, however, and the public so considers it, although four-fifths of the money needed to build it went for land, steel, concrete, brick, furnishings, and other non-electrical products.

"Can electrical homes be sold?" asked Mr. Billingsley. "We are told that we are close to a revival of active house building. If the new ideas in home construction have taken root in the public mind, it is our function to provide clear definitions of what constitutes an electrical home for the guidance of builders, architects, and prospective home owners."

It is difficult to secure complete statistics on the number of new houses built annually, as a measure of the possibilities of this market, the speaker explained. According to the Federal Reserve Board index, the two high years of residential construction in the United States were 1925 and 1928. These two years totaled about the same.

From 1925 figures it appears that, exclusive of the homes in the farm-rural areas, there were built that year about 450,000 residential structures, or about three new homes for every 100 then standing. This would mean that in a peak year in your territory there were built about 3,000 new homes for every 100,000 that were then standing.

"It would pay to begin now to make plans actually to influence such a market," said Mr. Billingsley. "If the sale of appliances by groups is anywhere possible, it is here in the new house market. If advanced electrical conceptions, such as the electric home symbolizes, are anywhere salable, there is the market.

"The electrical homes at A Century of Progress, the Home of Tomorrow at Mansfield, at Nela Park are far in advance of past and current ideas of home planning and home development. They are genuine news now. The advanced electrical home will never again be as new, novel, and different from people's habit of thinking of their homes as it is today.

"Therefore, let us capitalize the new conceptions now, and to the fullest possible extent. In home development we are now where the automobile was when the manufacturers began to change the power plant from something simple and crude to something complex and highly refined. Let us not miss the chance to capitalize this period in the evolution of the electrical home.

"Many utilities are organized now to give wiring service and engineering and lighting service to architects, engineers, and contractors. Should they not now ask if their facilities are sufficiently broadly organized? Are they sufficiently informed on all the newer developments in interior home arrangement, in cabinet design, in interior decoration, in kitchen, basement, porch, garden, and room details, where electrical applications both directly and indirectly may be included?"

Should Build Model Homes

For influencing the new home market, and more particularly for equipping their own organizations to work with the factors in the building industry, it would seem inescapable that utilities themselves should build model electrical homes, the speaker opined.

The interest of the public, and of architects and builders, has advanced to a point where appliances and electrical applications are an inherent part of the design of the house. This presents utilities with new problems, new demands for knowledge and information, new opportunities for salesmanship and for service.

According to Mr. Billingsley the commercial manager of a Pennsylvania utility made a careful estimate of the possible saturation of appliances in the homes of his state. He did not assume 100 per cent saturation of all appliances as a practically realizable figure.

He estimated practical vacuum cleaner saturation in his territory to be 75 per cent of the wired homes, compared with 49 per cent saturation now. He estimated practical range saturation to be 36 per cent of the wired homes, compared with 6 per cent now. He estimated refrigerator saturation at 56 per cent, compared with 24 per cent now. He estimated water heater saturation at 30 per cent of the wired homes, compared with 1 per cent now. Electric clock saturation, because of duplication, he set at 125 per cent; radio set saturation at 130 per cent for the same reason.

Then he took 17 recognized appliances and calculated the number yet to be sold in his state to reach these modified and practical totals of saturation. At average retail prices he obtained the astounding total of $405,000,000 in appliances yet to be sold. Project this on a national basis and it becomes $4,500,000,000, or $225 a domestic customer.

Add to this a reasonable estimate for air conditioning and improved lighting equipment ($100 per customer as an estimate), and even according to conservative estimates you have $300 to $350 worth of appliances to sell to each domestic customer before you have attained the same universality in their use as applies to bathrooms.

"This is a big undertaking that requires all the tools of promotion and all the ideas for promotion that are at hand or can be created. The electrical home is one such idea. It is the biggest promotional idea yet developed, because it can capture more public interest, promote the idea of more appliances, much more dramatically than can any direct promotion of the appliances themselves.

"The electrical home permits the sale of electricity in the home as a group of integrated services, and this is something that electrical promotion needs. Most load-building activities of utilities leave something to be desired in that they are product-selling activities—the products being individual appliances.

"The electrical home relates certain appliances to one another, it makes a complete demonstration of what electricity offers to the home, it integrates the electrical conception, and what else have you for doing that in your domestic load-building promotion?"

Quinn Explains Plan for Selling Electrical Appliances to Low-Income Groups

ATLANTIC CITY—Low-cost appliances sold on an extended instalment payment program with public utilities handling the billing and collecting was the program suggested for getting major appliances into the homes of citizens with low incomes by T. K. Quinn, vice president of the General Electric Co., in speaking before the recent annual convention of the Edison Electric Institute here.

"The small energy-use customer is a liability directly on the books of the utility company because the cost of servicing him is often greater than the gross payments he makes," Mr. Quinn stated. "But he is a much greater liability as a limited user who does not enjoy the value, usefulness, or convenience of the service at his very fingertips.

Only One-Fourth Are Real Users

"Everything considered," Mr. Quinn pointed out, "only one-fourth of the domestic electric customers can be considered real users of today's electrical service, and that one-fourth represents but 15 per cent of all the homes of the country. The other 85 per cent have hardly more reason to be friendly than unfriendly to the industry and they are all voters.

"We should do very well to concentrate our attention a while on the 15,000,000 or 75 per cent of the present domestic users who do not have the major appliances they should have in their homes," said the G-E executive.

"An industry campaign built around the sales slogan 'Sell the Other Three-fourths' would serve to crystallize our activities on the really important work ahead.

Low Incomes Real Reason

"Why are the great services of electricity limited to a relatively small proportion of American homes? Let us be sensible about it. The plain, honest answer is that the majority, yes 75 per cent, of the families cannot afford to purchase them. Monthly household incomes of $150, $125, $100, or $75 do not permit the purchase of anything requiring payments of as much as $10 per month which can possibly be avoided."

The prices of energy and of appliances are not too high from the profit and loss standpoint of the producers, said Mr. Quinn. But they are too high in relation to the overwhelming minority of the pocketbooks of the country.

"Fortunately, there is a way out. The payments per unit of electricity may be lowered easily enough if we can only produce and sell more current. We can sell more current if the payments for current and appliances are lowered.

"The payments for appliances may be lowered easily enough if we can only produce and sell more appliances. We can sell more appliances if the payments for current and appliances are lowered.

Cream of Market Gone

"It is a fairly accurate generalization that after 5,000,000 units of almost any product for the home are sold in this country further sales are not made in appreciable quantities unless the list price is under $100.

"As a manufacturer, I am able to tell you today that we can produce suitable refrigerators to list for $80 or less, given mass production on a larger scale than we have heretofore enjoyed. We can produce suitable electric ranges in quantity to list at $75 or less. Other appliance prices either are or can be in proportion.

"But this does not finally settle all of the questions. The credit of the mass of customers and their ability to pay are governing considerations.

"We could sell an $80 refrigerator over a 36-month period for a little more than $2 a month and sell more of them in the next three years than have been sold in the past 15 years. We could do so, *except* for the finance charges, which at prevailing rates, over that period of time, would be positively prohibitive. They would amount to half the price of the refrigerator itself.

Bookkeeping Expense Is Factor

"What makes these charges prohibitive? Is it the cost of money alone? Certainly not. Is it the credit risk? No. Is it repossession expense? Again no.

"What, then, is it? Well, it's the booking, billing, and collection expense. Remember, it costs just as much to book, bill, and collect one dollar as it does $100 or $1,000. The percentage ratio of the cost becomes greater as the amount booked decreases, because the booking, billing, and collection cost is practically fixed."

One of the functions the light and power utility companies are preeminently qualified to perform is to book, bill, and collect small accounts, Mr. Quinn declared. They do it efficiently, inexpensively, and on a mass scale.

"The commercial instalment credit companies of the country cannot economically handle monthly payments of less than $10. Less than $5 is out of the question.

"The utility companies, on the other hand, collect monthly payments of as little as $2 or less. Merely to add an item of $2, $3, $4, or $5 to the regular monthly bill would involve a minimum of additional expense. The exorbitant cost of handling small instalment payments could be more than cut in half, particularly with the new lower interest rates for money.

"Utility companies could handle the bookkeeping for every appliance sold on their lines, whoever made the sale. The public would know that an economic saving was thus made possible and would gladly give credit to the utility companies for it. Dealers, distributors, and manufacturers would naturally be grateful for this help.

"Each transaction could be handled up to the point of default or beyond, as might be predetermined. Funds to finance these sales could be advanced by the utility company from its own borrowings. Funds could be secured from finance companies. Funds could in some cases be obtained from the manufacturers of the product.

"Funds could in perhaps most cases, under proper conditions, be secured through the newly organized Electric Home & Farm Authority, which was launched in part for just this purpose.

"A national move sponsored by the Edison Electric Institute would popularize the whole program and make clear its purpose and benefits. The result should be to double the present domestic load within three years with strong promotional support.

"Prices of both appliances and rates for the current to operate them would be less. The industry would automatically secure a favorable public reaction. In short it seems to be a crucial matter of great ultimate importance.

"The plan is not brand new. It has been successfully worked, in somewhat different form, by several companies, with beneficial results. It is an important part of the promotional plans of the Electric Home & Farm Authority in the Tennessee Valley. I commend it to you for universal adoption as a practical means at hand to help meet the competition of the times in a manner not inconsistent with modern methods or out of tune with the competitive practices of the day."

A Plan for Reaching Untouched Markets

An electric refrigerator listing at $80 or less, which can be sold on a time payment plan over a 36-month period, with the billing and collecting done by the power company.

That's the way to get electric refrigerators into the homes of families where the monthly income is in the range from $75 to $125, T. K. Quinn, vice president of the General Electric Co., told utility representatives at the recent meeting of the Edison Electric Institute.

His address before the utility representatives is reported on this page.

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EDITORIAL AIMS

To encourage the development of the art.
To promote ethical practices in the business.
To foster friendly relations throughout the industry.
To provide a clearing house for new methods and ideas.
To broadcast the technical, commercial, and personal news of the field.

VOL. 12, NO. 8, SERIAL NO. 274, JUNE 20, 1934

Sales Organizations Go Back to First Principles

AFTER knocking all previous records to smithereens in the first five months of 1934, electric refrigeration sales organizations finally began to hit a few bumps. Retail demand has slacked off perceptibly in the last few weeks.

To most factories this sudden slump hasn't meant a thing as yet. They're still driving their wheels at the highest speed of all time, and some of them have stepped up production to greater heights than their engineers ever thought could be achieved in present plants. Many factories are still far behind on orders. (The sudden check in the flow of orders has, however, enabled factories to see their way out into the clear for the first time this year.)

Out in the field, however, there has been a very definite change in conditions. No longer are people walking into showrooms and interrupting planned sales talks to ask for an order blank. The big rush of ready buyers—a rush which made distributors and dealers believe they were dreaming, and made order and shipping departments *know* they were having a nightmare—has faded away, and sales organizations are now forced to turn from order-taking back to old-fashioned selling.

Specialty Selling Methods Indicated

To distributors and retail sales managers this sudden drop in business causes no worries or scratching of heads. They know precisely what's the matter, and exactly what to do. They know that specialty selling methods are indicated once again, they remember that they made astounding sales records when times were much tougher, and they understand how to follow the specialty selling formula to renewed high volume.

Toward that end a flock of contests have been launched. Norge has an elaborate national contest, sweetened with big cash prizes, in progress. Promotion departments of at least three other manufacturers are buttoning up plans for contests designed to keep salesmen at fever heat during the closing months of the season. And distributors in great profusion are running local contests of their own.

Contests Employed to Stimulate Salesmen

Most of these contests arranged by distributors, if we may judge from the announcements which have been reaching our desk, have for their reward trips to Chicago to see the second edition of A Century of Progress exposition. Dozens of distributors used such trips as prizes for contest winners last summer, and found them uniformly successful as business stimulators.

During the summer of 1934 the number of salesmen and dealers who will get free trips to the Fair seems likely to be doubled. Rufus Dawes and Major Lenox Lohr of the Fair management should feel obligated to the refrigeration industry, one feels, for sending them so many customers.

Not only are contests being arranged to stimulate salesmen to greater efforts, but dealers are going back to cooking demonstrations, free shows, souvenirs, drawings, guessing contests, theater tie-ups, and similar tried-and-proven devices to attract store traffic again. They are also increasing their advertising.

Getting Salesmen Back to Work

Biggest problem, distributors tell us, is to get salesmen back to work. The pickings have been too easy, and many of them have "gone soft." They forget how hard they worked before making a sale last year and the year before, and sigh for the taking-candy-away-from-a-baby days of the early part of 1934. Hence distributors figure it may be a few weeks before they can swing their sales crews back into their regular strides.

After a delightful sojourn in a sort of Happy Hunting Grounds for a time, the industry is going back to first principles. Specialty selling made it a successful business all through the depression, and specialty selling is expected to help the industry continue its march to an amazingly high new all-time sales record for the year.

Refrigeration Industry Fools Weather Man

WEATHER has apparently had a great deal to do with sales of electric refrigerators in the past. A few years back ELECTRIC REFRIGERATION NEWS published an elaborate chart, compiled by a New York public utility, showing how the sales of electric current for the manufacture of artificial ice, coincided with the weather curve. It was noted that the prosperous years for electric refrigeration were those in which warm weather came *early* in the season.

Last year when the refrigeration selling season got off to a discouragingly slow start, dealers almost invariably blamed the late spring for the hesitancy of buyers. And sure enough, when warm weather came, buying started with a rush. It seemed, up until this year, extremely difficult to interest a prospect in refrigeration until warm weather came.

Protracted Winter Period

1934, however, has proved an exception to this general rule. In the Middle West, at least, there was practically no spring at all. Winter continued right on up until the date officially set for the beginning of summer. Scientists told us that activities of a sunspot would make this an unusually cold year. Yet this protracted winter period produced the most astounding demand for electric refrigeration, and the greatest number of sales, that the industry has ever enjoyed.

Conversely, with the advent of summer, sales have slacked up. The weather man has thus been completely fooled—or foiled—this year.

Refusing to Follow the Pattern

Electric refrigeration apparently refuses to follow the pattern, to be subject to the ordinarily understood rules of the game. It defied the depression; it is experiencing an astoundingly rapid progress through the cycle which all specialty appliances generally follow; and it has now thumbed its nose at the weather man.

He who would run his life by the textbook, or by following the rules he learned in some other "game," is seemingly due for a rough time of it in electric refrigeration. Successful men in this industry are those who can supply original thinking to meet unexpected situations, and who can keep themselves readily adaptable to a rapidly changing business picture.

LETTERS

800 Service Men Strike

226 W. 17th St., New York City
June 15, 1934.

Editor:

For the past two weeks, or longer, some 800 refrigeration service men have been on strike in New York. Yet in neither of your last two issues have I seen any mention of it.

What are you running—a Refrigeration News that serves the interests of all, or a Farmers Gazette and Advertising Bulletin? I notice you are padding your sheet with data concerning machines now so obsolete that you'd need a fine tooth comb to find any of them in operation. If you can find space for this sort of antiquarian indulgence, I should think that you'd be able to print a small item dealing with this strike, which is of real, live up-to-the-minute interest to thousands of your readers.

Perhaps I speak inconsiderately? Maybe it is heresy of some sort or another to mention the fact that a few hotheads are doing battle with the full page advertising powers that be? In that case I'm not praying your forgiveness; I still think that as news gatherers you are all good advertising men.

JOSEPH A. O'BRIEN.

Answer: For Pete's sake, Mister, we didn't know a thing about it. We have been scouring all over the Middle West during the past couple of weeks—Chicago, Kansas City, Omaha, Des Moines, St. Paul, Minneapolis, Milwaukee, etc., and a couple of the editors are scheduled to go east next week.

Ordinarily, we can depend upon it that someone will tip us off to any unexpected turn of events of major importance but it is not hard to figure out why neither manufacturers, distributors, nor dealers would be inclined to assist in publicizing a strike which affects their *service to customers*.

You would think that some of the 800 service men (if there are that many) would be smart enough to get their side of the story into print. This paper has never turned down any real *news* yet.

Be a little more charitable about the service information now running in the paper. It is the obsolete machines which service men are constantly asking about. They know a good deal about current models, can get parts and instructions from the active manufacturers. Furthermore, the *principles* involved often apply to present-day models.

Relations Between Kelvinator and Leonard

Hull Electric Co.
146 S. Santa Fe, Salina, Kan.

Editor:

We have been told that Kelvinator makes the units for the Leonard box, and Leonard makes the cabinets for the Kelvinator and Montgomery-Ward box. Is this true or is the Leonard made complete in its own plant? Does Leonard make the unit for the Montgomery-Ward box? If not, who does?

May we congratulate you on the unbiased stand your paper takes? It is rare to find a publication that maintains its independence so successfully. I think it is this factor more than any other that makes your paper so valuable to the industry.

WARREN HULL.

Answer: Leonard Refrigerator Co. and Kelvinator Corp. are competitive but closely related. Some years ago Kelvinator Corp. of Detroit (pioneer manufacturer of electric refrigerators) bought the Leonard Co. of Grand Rapids (pioneer manufacturer of ice boxes). Later the Leonard Refrigerator Co. was formed with headquarters in the Kelvinator plant in Detroit. Cabinets for both makes are made at the Leonard plant in Grand Rapids, machines are made in Detroit. The sales organizations are competitive.

Universal Cooler makes the machine for Montgomery Ward and Leonard makes the cabinet. It is all very confusing and probably someone at Kelvinator, or Leonard, will telephone us immediately that we are all wrong on some point above. Perhaps we are.

They Want to Know the 'Rank' of the Leaders

Carolinas Refrigeration Co.
Leonard Distributor
121 E. Franklin Ave. Gastonia, N. C.
June 6, 1934.

Editor:

I wonder if any figures are available regarding the sales, both past and present, of various leading companies. Anyway, would like to have figures on numerical standing of Nema companies.

JAMES W. DURST,
Wholesale Division.

Answer: Many others ask the same question. We would like to know too but the Nema statistical program does not provide for the release of data showing the "rank" of member companies. Considering the excellent job being done by the Nema statistical department and the continued elaboration of the tabulations, we are inclined to be patient about the matter of "rank." Perhaps that will come along later. The monthly figures which are released *officially* through ELECTRIC REFRIGERATION NEWS and recorded in *full* in the 1934 REFRIGERATION DIRECTORY constitute a most valuable service to the entire industry and the Nema organization deserves unstinted praise for this constructive activity.

G-E Guarantees

2085 Cornell Road
Cleveland, Ohio
June 12, 1934.

Editor:

I am interested in knowing, for statistical purposes, the approximate date that the General Electric Co. began manufacturing iceless refrigerators, and what their guarantee policy has been from that date until the present time.

I am making some comparisons, and understand that at present the General Electric Co. has one ice box that is guaranteed for five years, but that originally they guaranteed it for one year, and increased the life of this guarantee at intervals of which I do not have the dates, and that is the information I especially desire.

I am also interested in the specific wording of their present guarantee.

LUCILE B. WINTERS.

Answer: We do not know when General Electric manufactured its *first* refrigerator, but the Refrigeration Department was launched Jan. 1, 1927. If we remember correctly, it was in the fall of 1928 that they began production in a big way. Sales in 1929 were phenomonal. The guarantee was for one year. In 1930 it was stepped up to two years. In March, 1931, the three-year guarantee was announced at the Toppers convention in Cleveland. In April, 1932, the four-year service contract was presented and in March, 1934, the five-year protection plan was advertised. We suggest that since you live in Cleveland you obtain the exact dates, with confirmation or correction of the above, also the exact wording of the present guarantee by calling at the Nela Park office of General Electric Co.

More of the Same

Meinecke Bros. Hardware
Lubbock, Tex.
June 13, 1934.

Editor:

Kindly send us full and detailed information on the guarantee policy on the General Electric refrigerator.

A. S. MEINECKE.

Note to General Electric Co.: Apparently readers want to know more about your guarantee. Give us the latest revision and we will publish it in full.—Editor.

Cold Spot on the Spot

Arthur R. Lindburg Co.
3504 No. Grand Blvd., St. Louis
June 14, 1934.

Editor:

We have purchased three of your 1934 REFRIGERATION DIRECTORIES and notice that the Cold Spot refrigerator is not listed.

I noticed in ELECTRIC REFRIGERATION NEWS that the specifications data on the Cold Spot would be available in the issue of June 6.

This refrigerator is one of our main competitors and I do feel that we should have the data on this refrigerator in order to bring our directory up to date.

Please forward three copies of this issue as we are very desirous of getting our DIRECTORY complete.

WILLIAM GEORGE HILD.

Note to Sears Roebuck Co.: You promised by long distance phone to send those specifications and we took you at your word. We note that you bought 500 extra copies of the Specifications Issue so you must think the data is useful. What about it?—Editor.

Correct Address of Fairbanks, Morse & Co.

Audiola Radio Company
Subsidiary of Fairbanks Morse & Co.
430 South Green St., Chicago.
June 13, 1934

Editor:

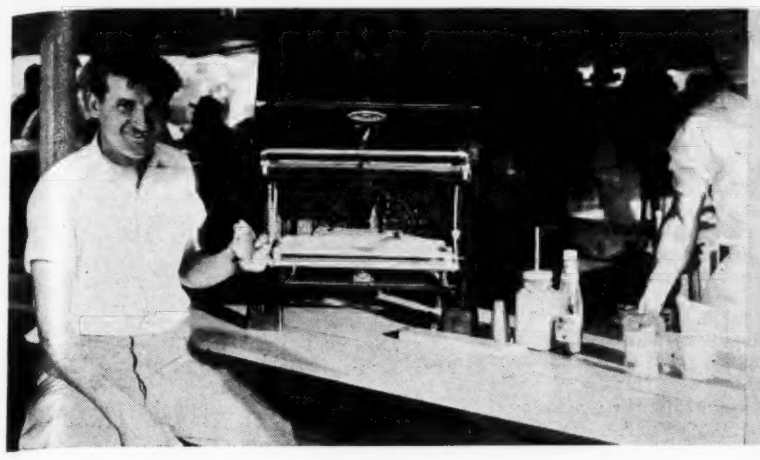
In your May 30 issue you were kind enough to show specifications of our refrigerators. We wish to point out, however, that you show the address of Fairbanks, Morse & Co., as Beloit, Wisconsin.

The executive offices and headquarters of this company are in Chicago and we would appreciate your showing it as much in any future reference to the company.

The address of the executive offices is 900 S. Wabash Ave., and the address of this subsidiary is per the letter head.

MORTIMER FRANKEL,
President.

Norge Refrigerators Share the Limelight with Daredevil Drivers at Indianapolis Race



Seth Klein, sales manager of the Detroit Gear & Machine Co., which like Norge Corp. is a subsidiary of Borg-Warner, has served as active starter for the 500-mile automobile race at Indianapolis for the past 15 years. This year, through his arrangements, Norge refrigerators had a prominent place at the automobile classic. One Norge was placed on display on the apron of the track at the starting wire, and two Norges were located in the judges' stand, to cool milk for the A. A. A. officials. Grouped around the cabinet at the starting wire (in the picture at the far right) are Col. Roscoe Turner, famed speed pilot; Mr. Klein; Gar Wood, holder of the world's speed-boat record, and Charles Merz, A. A. A. official. At the left is "Wild Bill" Cummings, this year's winner, enjoying a "hot dog" from a Norge Broilator. In the center photograph the cars are shown getting underway with Col. Turner acting as starter.

New Westinghouse Promotion Is Novel

MANSFIELD — Refrigeration department of Westinghouse Electric & Mfg. Co. has prepared advertising and sales promotion material for its new "C" line that is "different" in its manner of telling the story of the new product to potential buyers.

Three new promotion pieces for the "C" line include the full-line folder, selling catalog and special booklet on Dulux finish.

Full-line folder, printed in rotogravure, has photographs of all models with specifications tabulated in neat and compact form.

The photographs surround the specifications tabulation.

"How To Get the Greatest Enjoyment and Usefulness from Your Electric Refrigerator," is the title of 24-page promotional booklet printed in olive-green rotogravure. This piece is principally an exposition of the features of the "C" line and it also reviews the use of Westinghouse appliances as exemplified in the famed "Home of Tomorrow" in Mansfield.

The booklet on Dulux, plentifully illustrated, tells why Westinghouse adopted this finish, explains the method of application to Westinghouse household electric refrigerators, including the Bonderizing process.

New newspaper mats for local advertising, featuring the "cartoon" type copy has been prepared. The new billboard poster, in vivid colors and enhanced by a pretty girl, shows the use of the new Westinghouse "Handy Tray" inside the refrigerator door.

Feature of the special window display prepared for the "C" line are gaily colored ribbons, which dance in the breeze of an ordinary electric fan and point out various features of the cabinet.

A giant arrow, superimposed over the top of the refrigerator, bends at right angles at the corner of the cabinet and points down directly to the "Handy Tray."

New Tariff Plan Boosts Exports, Sparks Says

DETROIT — President Roosevelt's plan to readjust tariff agreements with other countries personally already has proven a big boon to world trade, William Sparks, president of the Sparks-Withington Co., manufacturer of Sparton electric refrigerators and radio sets, declared at a recent sales conference here.

Mr. Sparks said that a reciprocal downward revision of tariffs has proven particularly helpful in stimulating trade with Argentina and other South American countries. He said that the French people prefer American-made radio sets to their own but that the French government has set up maximum quotas for importation which prevents development of bigger markets for American sets.

In discussing the president's foreign trade policies, Mr. Sparks pointed out that President Roosevelt did not make full use of his most effective weapon when he opened American markets to the importation of millions of dollars worth of foreign wines and liquors. He explained that nations exporting large quantities of liquors to the United States could have been asked or required to take an equivalent amount of American-made goods in exchange.

B. & O. Dealers Seek Trip To World's Fair

NEWARK—All dealers of B. & O. Radio, Inc., Norge distributor here, are engaged in a sales contest which opened May 1 and will close Aug. 1. All retailers who make quota will be given a free trip to the Norge factory at Muskegon, Mich., and the Fair in Chicago, and taken on a three-day cruise on the Great Lakes.

Investors' Bulletin Sees Refrigeration Firms' Position Improved

NEW YORK CITY—May 23 issue of *Standard Trade and Securities*, bulletin published as a guide for investors, deals with household products and supplies stocks, and declares that sales improvement of the household products industry has been most pronounced in semi-luxury lines (refrigerators, furniture, etc.) and that with few exceptions, company earnings for the current year will be at least moderately better than 1933.

The positions of two independent manufacturers of electric refrigerators, Kelvinator Corp. and Servel, Inc., are reviewed as is that of Holland Furnace Co., manufacturer of air-conditioning equipment.

With respect to the electric refrigerator field in general, *Standard Trade and Securities* says:

"Among the lines in which saturation still is remote is electrical refrigeration. The large undeveloped market is mainly responsible for the impressive sales recorded during the depression.

"Future operations of household refrigerator manufacturers will be aided not only by the large remaining number of new sales prospects, but also by a gradually expanding and eventually important replacement market.

"The future demand for commercial refrigeration is more difficult to predict. The saturation point for such equipment probably is nearer than in the case of household units.

"Nevertheless, sales possibilities in this line are believed to be far from exhausted.

"As a result of economic improvement, this division of the refrigeration industry is expected to report operations for the current year which, both relatively and actually, will be much more satisfactory than the showings for recent periods."

Kelvinator Corp:

"Reflecting a marked expansion in sales, Kelvinator reduced its loss for the six months ended March 30, last, to $.03 a share, as compared with a deficit of $.59 for the like period a year earlier.

"Inasmuch as this report covers a period normally considered the poorest of the year, the showing was impressive. Prospects for further increases in sales are definitely promising, since the company now is entering the most active period of its business year.

"In fact, on the basis of present indications, it is anticipated that sales will establish a new peak for the current fiscal year. Moreover, several price advances have served to compensate for higher raw material and labor costs, and profit markins, therefore, are satisfactory.

"Recent dividend payments, while not designated as regular distributions, are expected to be continued and may be increased later. The establishment of a regular rate during the year is a definite possibility."

Servel, Inc.:

"The downward trend of Servel's sales was definitely reversed in the 1933 fiscal year, and indications are that the upturn subsequently has been extended. Although the winter period normally is accompanied by a sharp drop in refrigerator sales, the popularity of the company's new air-cooled Electrolux line and the improvement in public buying power tended to limit the usual seasonal recession this year.

"Prices have not yet been raised sufficiently to entirely cover the increases in production costs. It is likely, however, that per unit returns will be considerably better than those of last year. Thus, since present indications point to a substantial improvement in unit sales, it is probable that a fairly sizeable profit will be recorded for the current fiscal term.

"Consequently, the early resumption of preferred dividends is not unlikely, since financial position is satisfactory."

Country Phone System Brings Prospects to Food Show

KIOWA, Kan.—Edson Scott, local Kelvinator dealer, made novel use of the telephone system in this part of the country to bring out prospects to two food store demonstrations which he held recently.

Dealer Scott arranged with local telephone companies to put through 10 "general rings" to the 10 Kansas and Oklahoma towns nearest Kiowa. This sent his message about Kelvinator out on as many as 39 lines per town, each line carrying Mr. Scott's story to an average of 10 telephone owners.

Union Electric Displays Kelvinator Deluxe Line Features

ST. LOUIS—Original methods of "featuring the features" of Kelvinator deluxe model refrigerators are being employed by Union Electric Light & Power Co. here.

On the main floor of its showroom at 12th and Locust streets, the company has incorporated in its Kelvinator display a number of little triangular cupboards with shelves just large enough to hold the various deluxe accessories, such as the food file, ice trays, kold keeper, water pitcher, rolling pin, food dishes, hardware, etc.

Erie Utility Displays Complete Line of Uniflow Products

ERIE, Pa.—Erie Lighting Co. recently devoted one of the largest windows of its building here to a display of the complete line of equipment manufactured by the Uniflow Mfg. Co.

Equipment displayed included household electric refrigerators, beverage cooler, beer cooler, a water cooler, an electric beer pump, automatic shallow well and automatic deep well pumps, and electric cellar drainer sump pumps.

The products were displayed for a period of two weeks.

AIR CONDITIONING

Professors Willard and Kratz Report Illinois Research in Home Insulation

(Concluded from Page 1, Column 1)

and a number of distributors and accessory producers. Chief of interest in air conditioning was the research session Thursday morning.

Fred Sedgwick, who presided over the research session, told how University of Illinois research has devolved a number of methods of reducing the summer cooling load of a house—by cooling a home with night air drawn in through attic ventilating fans, by using awnings to reduce heat entrance from solar radiation, etc.

Newest contributions to cooperative research in the residence are from Frigidaire ($300), General Electric ($300), and from the Utilities Engineering Research Corp. of Chicago ($500), Mr. Sedgwick announced.

In introducing the next speaker, Mr. Sedgwick suggested a rising vote of confidence and congratulations to Prof. A. C. Willard who was recently elected president of the University of Illinois, and the session rose as a body to give him a spirited applause.

Prof. Willard discussed "Fifteen Years of Research in the Furnace Heating Industry," first telling how the association signed a cooperative agreement with the university in October, 1918, because the furnace industry needed certain information.

The program was started with different ideas of what was important than now prevails, because the objectives have been revised frequently from time to time.

"As the research progressed," Prof. Willard said, "we came to the conclusion that the structure of the house itself is just as important as the heating system itself in providing comfortable conditions," and it was this thought, together with the discovery that it is impossible to define the performance characteristics of a furnace accurately on the laboratory floor (as you can with a steam boiler), which lead to the warm air research residence.

Formerly, as much as 40 per cent of a furnace's heat production was lost in the bonnet and other places, Prof. Willard reported, but they now believe that if combustion is complete it is possible to reduce losses to only 10 per cent—which goes out as sensible heat at the top of the furnace. The combustion of oil and gas is pretty well understood, he said, the next problem in the field being the combustion of soft coal.

Stratification of air in a house is another problem facing the engineers. Temperatures are easily maintained at the breathing line, but with a large differential between indoor and outdoor temperatures, a 15° stratification frequently develops, according to the speaker.

A similar problem is that of cold walls and cold window glass which radiate cold to occupants of a room even if the room air temperature is maintained at the proper point. The more outside walls and glass in a house, the worse this problem is, he said.

"No heating system is going to be entirely satisfactory in producing human comfort unless you have a variable indoor air temperature," Prof. Willard declared. As the outdoor temperature goes down, the indoor temperature should be raised, he averred.

Turning to the much-discussed question of humidity, he explained that unless a house is fairly air-tight it will lose humidity in the winter from infiltration on a windy day.

With respect to insulation, the speaker urged the convention delegates not to waste a lot of heat on an "unbalanced house." Insulate the unbalanced rooms, he said. "It is far better to spend a few dollars for storm sash and insulation than to overheat part of a house in an effort to bring one cold room up to temperature," he declared.

These suggestions further emphasized Prof. Willard's proposal that engineers give increasing attention to the structure of a house to be heated.

In conclusion he made the point that a mass of highly technical information has been compiled during the years of research at the university, and this should be interpreted for the industry, manufacturers, installers, and the public. The problem is to reduce this information to less technical and more helpful form, Prof. Willard said.

Data to Be Published

The next speaker, Edwin Scott, sketched a plan for editing and publishing these data in more practical form, and asked the assembly how many would be bought. Single orders for 25 and 50 books transmitted to the chair totalled nearly 1,000 copies of the proposed book—which encouraged Mr. Scott to state that the book will probably be undertaken.

"Insulation of Homes" was the next topic on the program, being handled by Prof. A. P. Kratz of the University of Illinois.

The whole problem of heating a home is divided naturally into production of heat, and preservation of that heat, he stated at the outset. The second problem is of the same order of importance as the first, he believes.

The two principal means by which heat is lost from a house are by (1) conduction, and (2) by infiltration—as when a wind forces outside air in one side of a house and out the other.

He then launched into the problems of preparing and selecting insulation for a house.

"Practically all insulations employ dead air pockets for their heat resistance effect," he said, "since dead air space is about the best insulator known. As a result, the natural insulating value of all insulations is practically the same, conductivity values ranging from .3 to .5."

Always be sure you are talking about the same thickness of insulations in comparing their thickness, he warned.

Consider Overall Transmission

In figuring insulations always consider the total overall heat transmission of the wall in which they are used; in fact, you should consider overall transmission from outside *air* to inside *air*, he said.

"Insulations must be compared on the basis of their performances when installed in the wall, not on the basis of conductivity values only," he declared.

Due to such factors as film coefficients, insulations with low heat conductivity values may not be as efficient as those with higher values when installed in a wall, according to the speaker.

Another important factor in the effectiveness of an insulated wall is the wall structure itself, he pointed out, and showed lantern slides of various walls which illustrated the influence of their construction.

Calculations of savings possible by insulating a house must always take into account the fact that the heat transmission through the walls is only a part of the total loss—much of the loss being through windows, Prof. Kratz said.

The total reasonable savings possible by insulating both walls and ceiling is between 25 and 35 per cent, he believes.

The combined infiltration and glass loss generally runs around 55 per cent of the total heat loss, according to the Illinois professor. This immediately suggests the use of storm sash.

Storm Sash Tests

He then described a refrigerated test room operated at the university in which two rooms are built to try different insulations and constructions. Windows of these rooms face the refrigerated space, permitting experiments with storm sash.

Savings reported with storm sash in this set-up are probably high, due to the high ratio of windows to wall area, but nevertheless they are significant, Prof. Kratz states.

From this past season's experiments, he estimates that from 20 to 25 per cent savings in fuel are possible by installed storm sash. Storm sash also reduces stratification of air in a room, he found.

Final speaker at the research session was S. Konzo, special research associate at the university. Mr. Konzo gave a progress report on warm air research, telling about tests on location of heating thermostats, and discussing various types of registers and their effectiveness in circulating air from different locations.

Lewis Licenses Friez and Minneapolis-Honeywell

MINNEAPOLIS—Lewis Air Conditioners, Inc. of this city has just licensed Julien P. Friez & Sons, Inc., of Baltimore and the Minneapolis-Honeywell Regulator Co. to use a certain system of hooking up air-conditioning control devices granted the Lewis company under Patent No. 1,785,741. The Detroit Lubricator Co. was licensed some time ago, according to L. M. Butler of the Lewis organization.

The patent contains claims relating to any air-conditioning system or circuit wherein a humidity regulator is rendered operative by a thermally actuated regulator only when the heating medium has attained a temperature adequate for efficiently evaporating moisture and/or otherwise conditioning the air.

This patent further relates to any air-conditioning system where a fan is used for causing the air to travel through a conditioner, and where operation of the fan is controlled through the thermally actuated regulator and rendered operative only when the medium affecting the regulator has attained a pre-determined temperature.

Frigidaire Introduces $77.50 Refrigerator

(Concluded from Page 1, Column 5)

market and at the same time directly contributing to the effort of all industrial and governmental agencies to provide appliances that will improve the living conditions and the health of families that have very little to spend.

The new model is finished in white, moisture resisting, smudge and stain-proof Dulux with porcelain interior.

Its dimensions are approximately 36 in. high, 21 in. wide, and 21 in. deep. The model is the top-lid type, with the lid opening upward so that the user may reach downward and find items within easily available.

The model has one large ice tray freezing 2 lbs. of cubes. The mechanical unit is the 1/20-hp. hermetically sealed compressor that was introduced by Frigidaire early in 1933.

In size, design, and utility, Mr. Biechler stated, the new refrigerator is for an entirely different market from that now reached by electric refrigerator manufacturers and in no way interferes with the present price structures and present lines of Frigidaire models.

Milwaukee Air Filter Is Hay Fever Reliever

MILWAUKEE—The Milwaukee air filter, an electrical appliance for relieving hay fever and pollen asthma, is being manufactured by the Perfex Corp. of this city.

The device consists of a centrifugal fan driven by a fractional horsepower electric motor, and a close-meshed dry-filter element. The entire unit is housed in a green finish non-rusting metal housing and can be connected to any appliance outlet.

It is designed to be installed in sleeping room or office windows of either the conventional slide or casement types.

In operation, the fan forces the outside air through the filter, bringing pollen-free air to the inside. Other windows and doors are closed and the pressure built up forces the exhausted air out under the door and other cracks, making it unnecessary to seal the room.

As the fan and motor are outside the window, the unit is said to be very quiet in operation. The fan will handle 11,000 cu. ft. of air per hour.

F.o.b. prices on the Perfex filter are $45 for model "A" (a.c. 60 cycle 110 volts) and $60 for model B (d.c. 110 volts). Replacement filters are priced at $3.50.

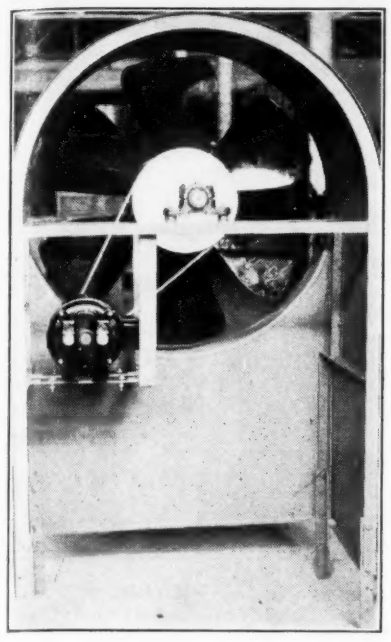
Chicago Electrimatic Co. Develops Water Valve

CHICAGO—A new automatic condensing water regulator for refrigerating units using methyl chloride, sulphur dioxide, or Freon has been introduced by the Chicago Electrimatic Engineering Co. of this city.

The new water regulator is of the direct diaphragm operated type. Operating head pressure necessary to open the water valve wide and close tight is 35 lbs., this giving even regulation over the entire operating range.

Features of the Chicago Electrimatic product are single adjustment, guaranteed non-breakable diaphragm, and replaceable standard composition seat discs.

For Night Cooling



Attic ventilating fan for night cooling of homes, introduced by Air Controls, Inc.

* * *

Air Controls Designs Attic Exhaust Fan

CLEVELAND — Bearing the trade name of "Silent Circulator," a new self-contained exhaust fan is being introduced by Air Controls, Inc. here to form the heart of its summer comfort ventilating system. The standard model moves 5,400 c.f.m., and there is a jumbo unit with a capacity of 10,000 c.f.m.

The Silent Circulator is designed for installation in the attic. It is placed near a convenient window there, and connected to the window by means of a flexible canvas casing and an adjustable band-iron frame. Legs of the fan housing are adjustable to permit raising or lowering of the fan to the same height as the window.

When the fan is thus installed, the attic door is opened, various windows downstairs are opened, and the ventilation process starts with the plugging in of the fan motor. In some cases, the company recommends that air be drawn through second-floor grilles instead of through the attic stairway.

The fan, driven by a V-belt, operates at less than 600 r.p.m. Both the motor and the fan bearings are rubber-mounted. All parts of the unit are accessible through the hinged grille-door on the housing. Finish of the latter is in dark green enamel.

Standard model of the Silent Circulator is recommended for homes in which the space to be ventilated is not greater than 15,000 cu. ft. The jumbo fan is for spaces up to 30,000 cu. ft.

Air Controls engineers estimate that the standard fan's ¼-hp. motor will cost 12½ cents per night to operate, the jumbo, 25 cents. They recommend that in homes equipped with this system, the windows be opened at 6 p. m. or later, and closed before 8 a. m. for best results.

Kason Hardware Buys Building in Brooklyn

BROOKLYN, N. Y.—Kason Hardware Corp., manufacturer of refrigerator hardware, has just purchased the Duhamel building at 127 Wallabout St. here. The building is a four-story brick structure with a total area of approximately 40,000 sq. ft.

After alterations are completed, the building will be used exclusively for the manufacture of Kason products.

Riley Co. Is Associated With American Injector

DETROIT—Under a new arrangement, F. B. Riley and the Riley Engineering Corp. of this city will henceforth be associated with the American Injector Co. at 1481 Fourteenth St. here, according to Mr. Riley. He will act as sales representative for American Injector on its line of refrigerating appliances, and that company will manufacture such devices as have heretofore been made for Riley Engineering Corp.

New Society Meets In Chicago, Inspects Air Cooling Exhibit

CHICAGO—Various phases of air conditioning were discussed and a number of parts and accessories for air conditioning were displayed at the Chicago Lighting Institute in the Civic Opera building here last week in the first convention of the Air Conditioning Engineers Society, started a little over a year ago by Dr. E. Vernon Hill, well-known air-conditioning engineer and publisher of the *Acrologist* magazine.

The A.C.E. society was founded as an educational organization for air-conditioning engineers, in conjunction with a correspondence training course directed by Dr. Hill.

Equipment Exhibit

The equipment exhibit included the following exhibitors:

Henry Valve Co. of Chicago (valves, fittings, and the new Dehydra-Tector refrigeration drier); Chase Brass & Copper Co. (brass pipe and fittings); Trane Co. (an operating display of a Trane produce cooler connected up with a two-cylinder Reliance refrigerating machine and the Trane Climate Changer); Lenox Furnace Co. (home air conditioner with forced air heating, cleaning, and winter humidification).

Independent Air Filter Co. (filters); Alco Valve Co. of St. Louis (expansion valves, controls, and fittings); Freeman Stoker & Engineering Co. of Chicago (coal stokers); Ilg Electric Ventilating Co. (miniature demonstration of attic ventilating fans for night cooling); Westinghouse Electric & Mfg. Co. (a Mobilaire self-contained air conditioner, displayed by Kroeschell Engineering Co., Chicago agent on air conditioning); American Air Filter Co. (filters).

Minneapolis-Honeywell Regulator Co. (refrigeration and air-conditioning controls); Century Electric Co. (motors); E. Vernon Hill Co. (measuring instruments for air conditioning); Wood Conversion Co. (model demonstration of house insulation); General Refrigeration Co. (new Lipman Freon machines for air conditioning).

Allen Bradley Co. (motor starters and controls); Trumbull Electric & Mfg. Co. (switches); Uni-Flo Corp. (air-distributing outlets); Refrigerating Specialties Co. (Monogram expansion valves and water regulating valves); Commonwealth Edison Co. (charts showing the period in which comfort cooling is required in Chicago); Owens-Illinois Glass Co. (filters); Spoehrer-Lange Co. (expansion valves); and Hart & Cooley Mfg. Co. (grilles and registers).

A.C.E. Meetings

Meetings of the A.C.E. society were held each evening in the auditorium of the Chicago Lighting Institute. First was Friday, June 8, with a talk by W. L. Brown of the Chase Brass & Copper Co. on "Application of Copper Tube and Fittings to Air Conditioning."

On Saturday night C. A. Rickner spoke on "Domestic Air Conditioning," followed by a demonstration of lighting effects in the institute.

On Tuesday the air-conditioning men re-convened for a talk by William Goodman on "Design and Operation of Unit Air-Conditioning Devices," and a demonstration of the "Black Hole of Calcutta" by Dr. Hill.

Wednesday night, W. E. Lowell discussed "Industrial Air Conditioning" and Dr. Hill gave a cabinet demonstration of skin temperature and human comfort.

Report of Experiments

Final meeting of the convention was addressed by S. Konzo of the University of Illinois Engineering Experiment Station on "Domestic Air Conditioning," followed by a demonstration of air and comfort by Dr. Hill, and election of society officers for the coming year.

Harry Ziel (Detroit) of the Albert Kahn Co. was elected president and Hanz Kreissl (Chicago) of the American Radiator Co. was elected secretary.

Dr. Hill's demonstrations were made in his glass-walled physiological test cabinet installed in the institute's auditorium. Living subjects were seated inside the cabinet and various air conditions, indicated on instruments outside, were imposed upon the subjects to show their reactions and demonstrate his remarks.

His Thursday night demonstration was preceded by a talk pointing out three recent findings about air and comfort. These were:

Human beings do not need nearly so large a quantity of air *for breathing purposes* as is generally thought. Many public school laws require, for instance, the circulation of from 25 to 30 cu. ft. of air per minute. This is the result of the erroneous belief that human beings contaminate the air they breathe.

Actually, Dr. Hill declared, one-third of a cubic foot of air per minute per person is ample *for breathing purposes*, although some additional is required for proper functioning of the skin.

Second new thought in physiology stressed by the speaker is that comfort is a function of the skin temperature, and skin temperature can be used as an indicator of human comfort.

Effect on Human Efficiency

Third new conception was that air temperatures have a very direct effect on human efficiency in working and on the restfulness of our sleeping hours. In this connection, he averred that girl factory workers are more efficient in temperatures around 85° F. than some of the lower temperatures commonly maintained in factories.

He also opposed the practice of opening the windows wide at night to get fresh and cold air. As he declared earlier in the evening, the oxygen present in a small volume of air is sufficient for breathing, and to introduce cold air at night simply makes the human system work harder to maintain the body temperature, this additional work required of the body necessitating more oxygen and slowing down the re-building process of sleep.

To show that comfort is a function of skin temperatures, Dr. Hill had two lightly clothed girls sit in the glass-enclosed cabinet to report their feelings of discomfort and comfort as he raised the temperature from 50° up to considerably higher temperatures.

At first the girls were cold, and their skin temperatures as registered from their foreheads, were in the 70 and 80° range. As the cabinet temperature was raised by means of high intensity lamps, their forehead temperatures steadily rose above 90° F. where they reported comfort.

A skin temperature above the normal body temperature of 98° would be a serious condition, he pointed out, because then the body is unable to dissipate its heat to the air (this is the cause of heat prostrations).

Mr. Konzo's talk Thursday night dealt with the air-conditioning experiments which have been conducted in the research residence at the University of Illinois, particularly as applied to warm air heating systems for the home.

He brought out three points as findings made in the research residence. First was that the construction of the house has an important bearing on the effectiveness of an air-conditioning system in producing comfort for its inhabitants.

For instance, university tests showed that when a temperature of 2° F. prevailed outside, the temperature of the inside of a single-glass window was only 17° F., whereas if double sash windows are used the inner glass temperature will be 46° F. The 17° glass temperature produces a feeling of coldness among people in the house because even if the air temperature is sufficiently high, the people will lose heat to the glass through radiation.

He also discussed stratification of air in a house, pointing out that when an air temperature of 70° F. is maintained by a wall thermostat at the breathing level, the temperature at the floor is frequently too low and the temperature near the ceiling is too high.

This condition is further aggravated when it gets colder outdoors, he said, when the temperature differential between the breathing line and the floor, and between the breathing line and the ceiling, becomes greater.

Two additional factors affecting comfort produced in a home are the heating equipment itself—a subject which engineers designing equipment are now giving greater attention—and installation practices (location of ducts, registers, etc.).

North Western Using 84 Air-Cooled Cars

CHICAGO—Air conditioning is being used in 84 railway cars operated by the Chicago & North Western Railway. Twenty-four air-conditioned dining and lounge cars are in service on its trains to the Pacific Coast, while trains to Duluth and Minneapolis use 60 more diners and lounge cars equipped with air conditioning. Both ice and mechanical equipment are used.

Plans of the Chicago & North Western in regard to air conditioning were outlined recently by Fred Sargent, president of the company, as follows:

"Our activity in air conditioning, for the present, will be directed toward finding out which method is best suited to meet the needs of the varied weather conditions in the country through which our road runs—the mountains as well as the plains.

"In most cases, air conditioning will be confined for a time to club, observation and dining cars, but some sleeping car equipment will be conditioned. It is another step in our drive to get passengers back on the rails—a drive which started with a general reduction in fares and the elimination of surcharge which became effective in December, 1933. So far, the results have been very encouraging."

Specifications of New Zerozone Commercial Machines

Zerozone Corp., Engineering Bldg., 205 W. Wacker Drive, Chicago, Ill.

Model No.	AB1416	AB1425	AB2433	AB3333	AB3450	AB3475	AB4375	AB43100	AB44100	AB44150	AB53150	AB53200	WB3333	WB3450	WB4375	WB43100	WB44100	WB44150	WB53150	WB53200	WB54200	WB54300
Overall Dimensions (in.)																						
Width	21	21	28½	28½	28¼	28¼	37	37	37	37	43	43	28¼	28¼	37	37	37	37	43	43	43	43
Depth	17	17	17⅝	17⅝	17⅝	18	22	22	22	22	25½	25½	14¾	14¾	22	22	22	22	25½	25½	25½	25½
Height	16	16	19	19	19	19	25½	25½	25½	25½	27½	27½	18⅜	18⅜	24½	24½	24½	24½	27½	27½	27½	27½
Refrigeration Capacity																						
In lbs. I.M.E. per 24 hours	100	212	246	375	488	640	617	617	850	850	1284	1284	375	488	732	732	974	974	1469	1469	1958	1958
Compressor Specifications																						
Compressor speed (r.p.m.)	360	360	440	300	440	640	285	285	370	370	280	280	300	440	300	300	390	390	310	310	425	425
No. of cylinders	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Bore (in.)	1½	2	2	2	2	2	2¼	2¼	2¼	2¼	2¾	2¾	2	2	2¼	2¼	2¼	2¼	2¾	2¾	2¾	2¾
Stroke (in.)	1½	1½	1½	1½	1½	1½	2½	2½	2½	2½	3¼	3¼	1½	1½	2½	2½	2½	2½	3¼	3¼	3¼	3¼
Motor size (hp.)	⅛	¼	⅓	⅓	½	¾	¾	1	1	1½	1½	2	⅓	½	¾	1	1	1½	1½	2	2	3
Quantity refrigerant in system (lbs.)	2	2	5	5	5	5	6	6	6	6	8	8	5	5	6	6	6	6	8	8	8	8
Pump down capacity of liquid receiver (lbs.)	2	2	5	5	5	5	14	14	14	14	21½	21½	5	5	14	14	14	14	21½	21½	21½	21½
Quantity of oil in system (pts.)	⅝	⅝	⅞	1¾	1¼	2	4	4	4	4	8	8	1¾	1¾	4	4	4	4	8	8	8	8

* * *

Compressor

Type of system .....Conventional
Type of compressor .....Reciprocating
Compressor drive .....Belt
Type of shaft seal .....Bellows
Cylinder head cooled by...A models—air; W models—water

Motor

Make of motor.....Wagner, Delco, or Century

Condenser & Liquid Receiver

Method of cooling.....A models—air; W models—water
Type of condenser.....A models—finned tube; W models—double tube

Refrigerant

Kind used .....Methyl chloride

Control

Make of control .....Penn
Type of control...Pressure & temperature
High pressure cutout.....On all but models AB1416, AB1425, and AB2433
Point of operation of high pressure cutout .....175 lbs.
Condensing water flow controlled by .....Pressure regulating valve

Valves

Type of suction valve.....Disc
Type of discharge valve.....Reed

C. V. Hill Co. Ends Dispute With Plant Workers

TRENTON, N. J.—The National Labor Board announced June 13 that a supplemental agreement had been reached between representatives of the Refrigerator Workers Federal Labor Union 18666 and C. V. Hill & Co., manufacturer of commercial refrigerators, in a dispute which grew out of an interpretation of the agreement reached before the board Feb. 8, calling off a strike.

The current dispute turned on the use of seniority in drawing men back to work from a preferential list. Agreement entered into provides that the departmental preferential list of Oct. 1, under the Feb. 8 agreement, shall be fully complied with: that the two parties shall meet and agree upon classification of positions for the men on the preferential list before June 19 and that any controversy growing out of departmental transfers shall be settled by mutual agreement.

The agreement also provides that no employe on the hourly rate shall work more than 40 hours a week except truck drivers and those getting not less than $35 weekly.

It also provides that no employe shall work in any one week more than the number of hours which he worked during the week ending Feb. 10, 1934, until all laid off employes have been reemployed in his department.

New York City Newspapers Regulate 'Warehouse' Type of Advertising

(Concluded from Page 1, Column 3)

hand dealers have sprung up and found the medium of newspaper advertisements an expedient way of baiting the public.

"They have resorted to advertising tactics involving the grossest kind of misrepresentation and in general, misleading the buying public. For instance, they will advertise that a warehouse is disposing of warehouse stock whereas they do not engage in the warehousing business; they will advertise that it is bankrupt stock to be sold at auction whereas there is no bankrupt stock on the premises: they will advertise that the refrigerators will be sold without regard to cost whereas there is a stipulated minimum price; they will advertise that it is to be an auction whereas no auctioneer is on the premises nor do they hold an auction.

"The replacement business is one of necessity. It is a natural evolution and as the saturation point is neared, the replacement business becomes greater. We are cognizant of this fact and it is our earnest endeavor to promote such educational work and curb such vices as to keep the business clean and on an ethical basis whereby the distributor and dealer alike will profit and the ultimate consumer receive a square deal."

Following is the adopted classified regulations for all New York city newspapers for regulation of refrigerator advertising.

1. All dealer advertisements must contain the advertiser's trade name with the address of the show-room.

2. The use of the term "Warehouse," "Storage," "Discount," "Finance," and so forth in advertiser's name is not acceptable.

3. New refrigerators can be advertised only when an advertiser states quantity and make of such refrigerators offered, and advertiser must be able to show bill of sale.

4. Prices mentioned must be specific as to whether they refer to new or used refrigerators. No cost prices permitted.

5. Newspapers as far as possible will not permit bait advertising.

6. No exaggerated statements in reference to discounts or cut prices will be permitted.

7. The expression of the term "Storage Sale" will not be permitted unless the advertising dealer can prove exactly when the storage sale is contemplated, and then the advertiser must plainly state the quantity, and the manufacturer's name.

8. The use of the term "Bankrupt" is not acceptable.

9. The use of the term "Auction" is not acceptable unless the time and the place of the auction, and the auctioneer's name is given.

10. Use of the term "Forced Liquidation" not acceptable.

11. Use of the term "To be sold without limit or reserve" not acceptable except when used in conjunction with an auction sale.

12. Use of the term "Repossessed" or "Finance Company's Repossession" is not acceptable.

13. Term "Guarantee" can be used only when an advertiser gives the name of the guarantor.

The *New York Daily News* regulations on refrigerator display advertising are as follows:

1. The trade name or manufacturer's name may not be mentioned in an advertisement which features new refrigerators unless the advertiser is the authorized dealer of the advertised merchandise offered for sale, from either the manufacturer, an authorized distributor or agent, or from bankrupt stock, or the stock of a distributor or retailer who, at the time of acquiring said stock, was an authorized agent for the manufacturer. Advertisers must be prepared to prove source of such stock and, if necessary, copy will be withheld pending submission to the *News* of such proof.

2. Advertisers who cannot qualify under paragraph 1 cannot state directly or infer that they have quantities of recognized brands of merchandise on hand or for sale at large discounts.

3. The unreasonable cutting of list price on current models by authorized dealers or one who has been an authorized dealer who is using the price cut to force the distributor or manufacturer to terms, will not be accepted.

4. Copy advertising new machines which are not current models must state the year in which the merchandise was current.

5. The featured name of the merchandise advertised must be the brand name and not the manufacturer's name. This applies to both new and used machines.

6. Prices quoted on both new and used refrigerators must be the retail price, not subject to any extra charges—except interest, if the merchandise is sold on credit. Delivery or installation, if charged for, must be specified.

7. Copy and layout—

(a) Advertisements which are so constructed as to give a false and misleading impression that the price of a featured item applies to other items in the advertisement when such is not the case, will not be accepted.

(b) Advertisements which feature a refrigerator at a price which is boldly displayed and which seek by the inclusion of illustrations of higher priced models, so placed in the advertisement as to give a false impression that the low price applies to said high priced model, will not be accepted.

8. The use of the word warehouse, storage, discount, finance, etc., as part of an advertiser's name slug is not acceptable.

9. Storage sale—this term will not be permitted unless the advertiser can submit satisfactory proof that the merchandise offered for sale is being sold in default of storage charges paid by the owner.

10. Auction—the term "auction" will not be permitted unless the sale is a bona fide auction sale. The name of the licensed auctioneer and the date of the sale must be specified.

11. Guarantee—the term "guarantee" can be used only when an advertiser gives the name of the guarantor.

12. Bait advertising—the use of bait advertising will not be permitted.

13. Comparative prices of either new or used machines must refer to the net retail price in effect at the time the machine was a current model. If comparative prices are stated in the advertising of used machines or discontinued models the year in which the machine was current must also be stated.

Inland Plans $325,000 Addition to Present Dayton Plant

DAYTON—Ground will be broken immediately for a block-long, $325,000 addition to the Inland Mfg. Co.'s present manufacturing facilities on West Third St. here, Wallace S. Whittaker, president and general manager, announced recently.

The new structure will be built on Inland Ave. between Coleman and Abbey avenues and will be 414 ft. long, 150 ft. wide and two stories high. The design is modernistic, of brick concrete and steel construction.

Covering a large area south of the company's present plant, the new structure will house the executive and general offices, and provide additional manufacturing facilities. The offices will be completely air conditioned with Frigidaire equipment.

The building now occupied by offices will be used to further enlarge the companies engineering and research laboratories. Frank Hill-Smith, Inc., is the engineering firm designing the building. Smith-Chamberlain are associate architects for the project.

Excavating will be started immediately, Mr. Whittaker stated. The building is to be completed within four months so that the facilities of the new structure and of the vacated office building will be available by fall when the manufacture of 1935 products is started.

Inland manufactures steering wheels, running boards, engine mountings, and various rubber products for all General Motors cars and for a majority of the automobile companies other than General Motors, also electric motor mountings and rubber ice cube trays and grids for Frigidaire and many other manufacturers of electric refrigerators.

Temprite Builds New 2-Temperature Valve

(Concluded from Page 1, Column 4)

cream cabinet, a refrigerator, and a beer cooler.

The new valve uses standard Temprite parts and embodies all features of the valves built for Temprite water and beer coolers, with the addition of a spring on top of the valve body to work against the standard spring and permit operation both above and below atmospheric pressure.

In fact, the new valve is manufactured on the same assembly line as standard Temprite valves up to the point of testing. Here it is supplied with the additional small spring to allow setting at zero pounds pressure or below.

With a standard spring arrangement the new valve can be operated between 5 lbs. pressure and 11 in. of vacuum. Various other spring combinations are available to give any desired setting between 20 in. of vacuum and 40 lbs. pressure, Mr. McLaughlin states. But in order to attain the sensitivity of a standard Temprite valve, the range of adjustment must be short.

The valve may be used with either sulphur dioxide, methyl chloride, or Freon. It may be used on high capacity coils, Mr. McLaughlin states, where a small amount of pressure drop through the valve is desirable. It will pass sufficient gas when used with sulphur dioxide to be equivalent to 18,000 B.t.u. per hour.

The valve closes tightly, Mr. McLaughlin claims, opens wide on a minimum pressure differential, and maintains its setting accurately. Adjustments are made by removing the protective cap and turning a knurled adjusting screw to obtain any desired pressure within the range of the springs. It comes equipped with ⅜-in. female pipe fittings.

B. & O. Dealers to Hear Norge Sales Plans

NEWARK—Dealers served by B. & O. Radio, Inc., Norge distributor here, will meet June 20 at Hotel Robert Treat in Newark for a dinner meeting at which Norge factory officials will present summer selling plans and show the new Norge oil burner.

Builds Organization

C. A. PEARSON

* * *

York Adds 100 Dealers During Past Year

YORK, Pa.—C. A. Pearson, manager of the commercial division of the York Ice Machinery Corp., announced last week that the expension program inaugurated last year has resulted in the appointment of more than 100 new sales outlets.

The dealers and distributors which have joined the York organization in the past year are independently owned, which distinguishes them from the commercial sales departments which are operated in a number of the larger York factory-owned branches.

All York air-conditioning equipment in the commercial range of application, as well as refrigeration equipment in the meat market, dairy, ice cream, water cooling, beer dispensing, and allied fields, is merchandised through the commercial division.

G-E Directors Elect 5 Vice Presidents

NEW YORK CITY—Five vice presidents and one commercial vice president were elected by the board of directors of the General Electric Co. at the meeting here May 25.

J. E. Kewley of Cleveland was elected a vice president in general charge of the incandescent lamp department.

R. C. Muir of Schenectady was elected a vice president in charge of the engineering department.

C. E. Tullar of Schenectady was elected a vice president in charge of the patent department.

E. O. Shreve of Schenectady was elected a vice president in association with Vice President J. G. Barry, in the commercial activities of the apparatus and supply business of the company.

H. L. Andrews of Erie was elected a vice president in charge of the activities connected with the electrification of steam railroads and such other duties as may be assigned to him by the president.

W. O. Batchelder of Chicago was elected a commercial vice president in charge of the commercial activities of the Chicago district.

COMMERCIAL REFRIGERATION

Kold-Hold Develops Hook-Ups for Use With Ammonia Unit

LANSING, Mich.—Kold-Hold Mfg. Co. has developed several possible hook-ups permitting the use of Kold-Hold units (installed in trucks) with both existing central plant ammonia systems and small auxiliary ammonia systems.

All present standard models of Kold-Hold are suitable for use with ammonia either flooded or dry.

Where the existing central plant is so arranged that it is impractical to carry the high-pressure liquid to the truck, the hook-up is made with a low-pressure liquid line, properly insulated, and suction line of the plant.

This system, however, is recommended only where the existing refrigerating machine capacity is in excess of the needs during that period of the day when it is desired to refrigerate the trucks, and also where it is possible to operate the main plant at back pressures of 5 lbs. or lower.

Where it is desirable to use a small auxiliary condensing unit for a fleet or for isolated storage rooms or single trucks, it is deemed advisable to operate the system flooded, with a thermostatic expansion valve in each low-side system.

In every case it is necessary to provide the lower fitting (as mounted) with a Tee and suitable valve, to permit purging of any oil which may accumulate from time to time in a low side.

Since the amount of this oil is generally small, it is usually customary to purge this to the air and discard it. However, if it is desired, this purging line can be connected to the suction line of the system, and the oil returned in this manner.

Suitable flexible lines, valves, couplings, etc. are available from manufacturers and distributors of ammonia equipment to give the necessary flexibility in parking the truck and making the connections daily for refrigeration.

A good practice in this regard is to have a swinging duct with a ventilating blower in the roof of the garage provided with a small hood in the lower end, which will reach various points at which the connections are to be made, and which permits the purging of any air in the coupling by ammonia gas, which is in turn exhausted by the blower.

Thus the daily connection and disconnection is made without the release of ammonia fumes into the garage proper, in any noticeable quantity.

Detroit Firm to Handle McCord Products

DETROIT—Refrigeration Accessory & Supply Co. at 919 Holden Ave., Detroit, has been appointed distributor of McCord commercial and domestic evaporators, commercial ice makers, condensers, and convection units, according to Morrill Dunn, vice president of the McCord Radiator & Mfg. Co. here. J. M. Oberc is general manager of the new distributorship.

Kelvinator Promotion To Feature 'Exact Selection'

DETROIT—"Exact Selection" will be the theme of Kelvinator Corp.'s advertising and selling program on commercial refrigeration this year, according to J. A. Harlan, commercial sales manager.

Point of the "Exact Selection" program is to visualize to the prospect the ability of Kelvinator to meet all refrigeration requirements with its line of commercial refrigeration equipment.

For the application of this sales principle, Kelvinator is offering its sales organization a "Three-Step Selling Plan" which concentrates commercial selling into three simple steps.

Three Steps in Plan

The three steps are investigation, specification, and demonstration. The entire equipment for presenting the proposal to the prospect has been concentrated into a single piece of equipment, a new "presentation and proposal file." All the materials needed for putting a complete commercial selling program into effect when used in conjunction with data survey sheets, the product and price manual, and the commercial applications manual are packed into a substantial box which serves as a handy desk file.

The way in which the steps are applied in actual selling is explained by Mr. Harlan as follows:

Inspects Premises

First step is investigation. In this initial approach the salesman calls upon the merchant, introduces himself, and stresses the fact that he merely wants to inspect the premises to investigate the need for Kelvinator equipment.

The salesman emphasizes the fact that until he is satisfied that the merchant can use such equipment profitably, his company will not allow him to sell. Upon receiving permission to investigate, the salesman uses his data and survey sheets to obtain information which will enable him to know exactly what equipment the merchant can use. Only equipment needed on this first call are line folders, a handout folder, and the data and survey sheet.

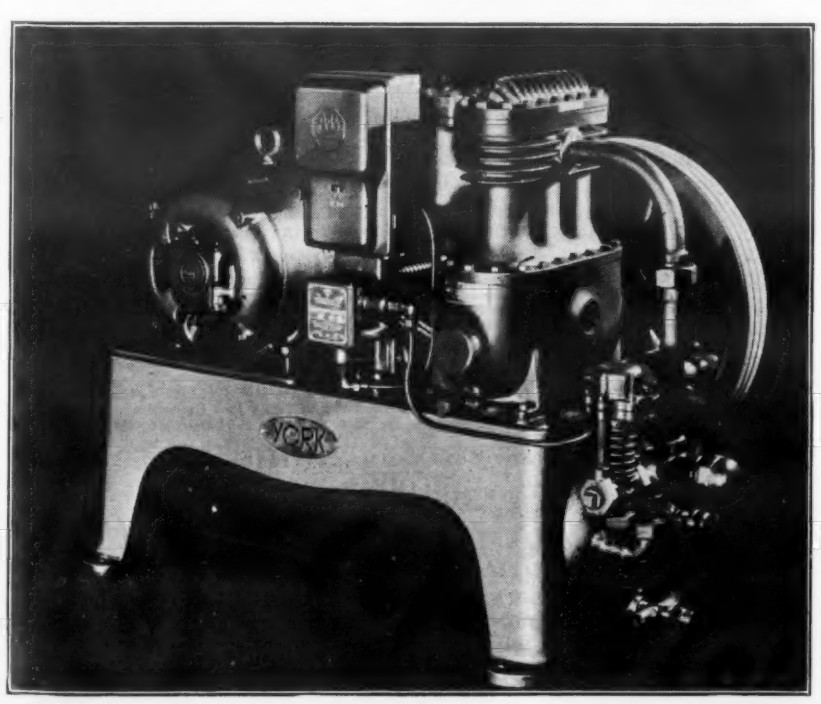
Determine Proper Equipment

In specifying proper equipment, information obtained on the first call is used, together with the product and price manual, and the applications manual, to determine the proper equipment to install.

Presentation and proposal sheets to cover the equipment needed are then assembled. A "personalized" proposal, consisting of a title page containing the prospect's name, is used. The equipment specified is shown, and a complete outline of the proposed equipment presented, together with an itemized list of equipment and prices.

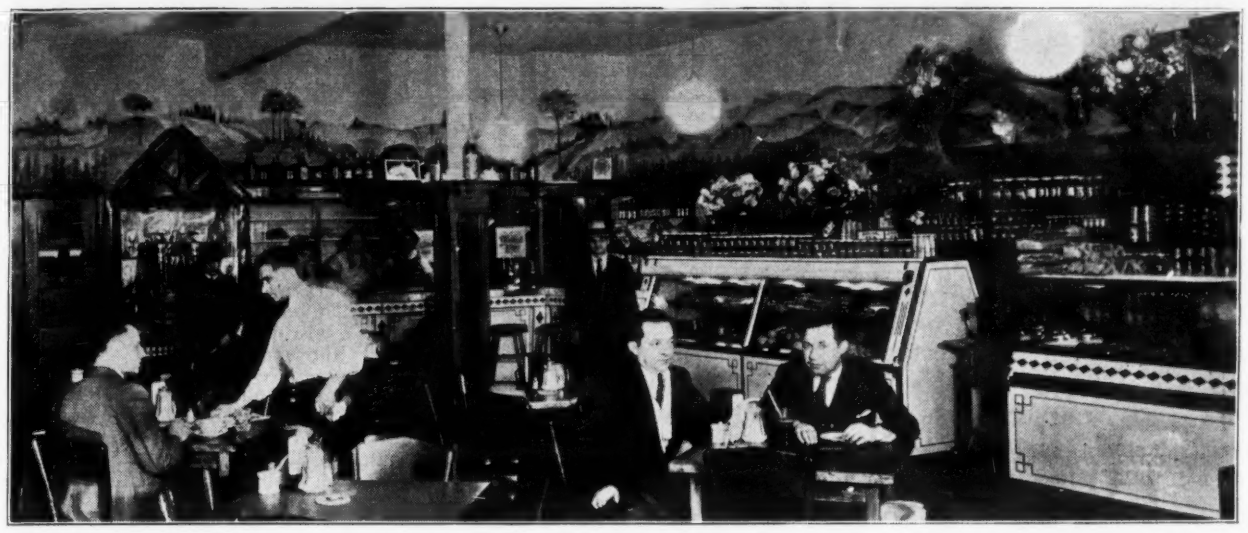
In proceeding with the third step, demonstration, the only equipment needed is the personalized presentation, which the salesman has previously prepared, showing pictures of and describing the equipment specified.

One of York's 'Balanseal' Units



Just introduced by York is this 3-cylinder, 3-hp. Freon Compressor featured by York's new "Balanseal" compressor construction.

Mechanical Refrigeration Serves Many Purposes Here



Barney's delicatessen in Cleveland has found a number of uses for its mechanical refrigeration system. By multiple connections with a single Servel 1-hp. unit proprietor Kronick refrigerates a combination beer storage cooler and bar, a keg pre-cooler, a bottle storage cooler and a delicatessen display case.

York Develops Keg Passing Door

YORK, Pa.—An improved type of cold storage keg passing door has recently been developed by the York Ice Machinery Corp.

The new door is equipped with a swinging flapper which is hung from the top of the frame, thus reducing the infiltration of air through the door to a minimum.

Strong spring bumper bars, located on each side of the flapper, are designed to withstand the continual impact of rolling kegs, without damage to the flapper. The inside of the frame and the sill of the door are further protected by a covering of galvanized steel. The door can be readily opened from the inside by merely pushing on the flapper.

Taylor Freezer Sold to Sanitarium

CINCINNATI—A Taylor counter-type ice cream freezer was recently installed in the Hamilton County Tuberculosis Sanitarium here. The sale and installation was made by Refrigerating Equipment, Inc., of this city.

Kason Develops Cab Lock With 2-Way Handle

BROOKLYN, N. Y. — Just introduced by Kason Hardware Corp. is a new "cab lock" with a two-way action handle and a dove-tail which prevents door sag.

The handle opens the door on either the up-swing or the down-swing. The lock can be used on either the right-hand or left-hand door.

A dove-tail fits into the slot on the striker plate and so brings the door to center when closed.

Super Cold Co. to Handle Commercial Line

PITTSBURGH—Super Cold Co. of Pennsylvania, with offices at 4647 Center Ave., here, has recently been appointed exclusive distributor for the Commercial Refrigerator Mfg. Co. in Western Pennsylvania and Northern West Virginia.

The distributor will handle Commercial Refrigerator's "Supercold" line of display cases, storage coolers, ice cream freezing and hardening equipment, milk coolers and beer dispensing equipment. Austin B. Sullivan is general manager of the firm.

Beer Distributor Cools Keg Storage Room

YONKERS, N. Y.—After taking over distribution of Pabst beer recently, Shannon & Engle, wholesale grocer here serving New York's Westchester county, constructed a storage room of sufficient size and refrigeration capacity to handle 300 barrels of beer per day.

The room is made of cork and cement. Two model 200-BW 1½-hp. Servel compressors and four Humidrafts, model HS-99, provide refrigeration.

McCray Refines Style Of Display Case

KENDALLVILLE, Ind. — McCray Refrigerator Corp.'s anniversary model X-107 introduced this year has been replaced by model 106, practically the same case but with a few changes and improvements.

Feature of this case is its "styled" design, with special panels in ivory finish on the exterior front and ends, with base of dark brown. Another feature is the exterior lighting, with the lights invisible to the customer.

Model 106 is made for use with electric refrigeration only.

SERVICE

How to Perform Typical Service Operations on Welsbachs

A BREAK-DOWN of service difficulties on Welsbach electric refrigerators, together with their remedies, and an explanation of service on the two thermostats used on Welsbachs, follow as a sequel to the Welsbach service information published last week in ELECTRIC REFRIGERATION NEWS. Next week an analysis of typical service calls will be presented, with their remedies.

Two different kinds of thermostats are used in Welsbach refrigerators. One was built by the Welsbach Co., the other by Bishop & Babcock.

The Welsbach thermostat was mounted directly on the surface of the evaporator, and when the temperature rises to 24° F., it started the motor and operated it until the temperature was reduced to about 18° F. Then the electrical circuit was broken.

Actuating member of the Welsbach thermostat is a bi-metallic spirally wound coil (See Fig. 1). In appearance it resembles the mainspring of a clock. Outer end of this coil is mounted rigidly in the thermostat case. To the inner end of the coil is attached a cradle which supports a mercury tube switch.

The bi-metallic spring possesses the property of winding itself in one direction when subjected to a reduction of temperature, and in the other direction when subjected to an increase of temperature because of the different coefficients of expansion of the metals which go into its construction.

As the coil contracts due to a reduction of temperature, the supporting cradle tilts the glass tube so that the mercury flows away from the contact points and breaks the electrical circuit. As the temperature rises again, the coil expands and tilts the tube in the other direction until the mercury flows to the opposite end of the tube and re-establishes the electrical circuit.

In assembling the thermostat, its case is sealed so that no moisture-laden air enters when the air within it cools and contracts. This is essential to avoid the accumulation of moisture within the coils of the spiral

Welsbach Thermostat

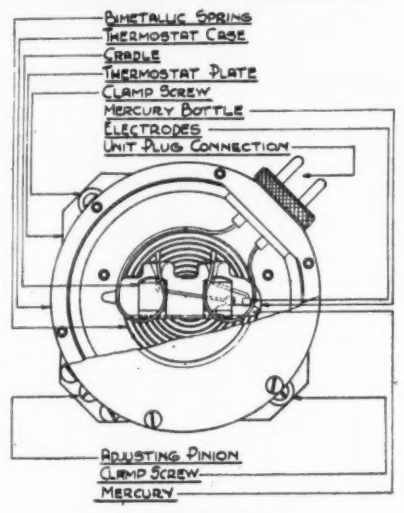


Fig. 1—The Welsbach-built thermostat, described herewith, is mounted directly on the evaporator surface.

spring or between this spring and the back of the case.

If this precaution were not taken, the accumulated moisture might freeze and prevent the thermostat from functioning, thus causing continuous operation. This would be particularly liable to happen after defrosting the evaporator.

The thermostat is mounted on the thermostat plate of the evaporator by means of two flanged screws diametrically opposite to each other. It is engaged by another screw slotted and shaped in the form of a small gear or pinion which meshes with teeth in what might be called the gear sector of the thermostat case.

The thermostat case is marked on its cylindrical surface so that if mounted rigidly in the thermostat the center of the adjusting pinion, it will break the electrical circuit when the evaporator temperature drops to about 18° F.

If it is necessary to change the temperature setting, the two flanged clamp screws should be loosened and the adjusting pinion turned by means of a screw driver applied to its slotted head. Turning the pinion in a clockwise direction will increase the cut-out temperature. The thermostat turns in a direction opposite to that in which the pinion is turned, and a movement equal to the spacing of one tooth will change the cut-out temperature of the cooling unit between 3 and 4° F.

If the setting is too cold, turn off current and allow the evaporator to warm up to 20° F. To accelerate the door may be opened slightly for short intervals, but the warm room air should not be allowed to act directly on the thermostat.

When the brine reaches 20° F., adjust the thermostat so that it just breaks the electrical circuit. Then turn the thermostat in opposite direction until the circuit is again completed. This will occur at the desired setting. To verify this, the brine temperature should be observed at time of cut-out (it should occur at 18° F.).

Bishop & Babcock Control

Bishop & Babcock's control, used on some Welsbach refrigerators, operates by means of a snap action diaphragm (see Fig. 2), motive power being obtained by the vapor tension of the liquid with which the bulb is filled.

The bulb of the thermostat, which is connected to the actuating mechanism by means of a flexible copper tube of small diameter, is located within a special sleeve on the freezing unit.

When the brine tank warms up, it builds up a pressure in this bulb which, in turn causes the diaphragm to bulge out, overcoming tension of the contact spring. This brings the contact ring and contact points together, thus completing the circuit and causing the motor to run.

When the brine tank cools down to proper temperature, the pressure drops and the diaphragm snaps back to its former position (the position shown in sketch), breaking the contact and causing the motor to stop.

The actuating mechanism must be located at a distance that makes it possible to have the bulb within the special sleeve of the freezing unit.

The B. & B. thermostat is equipped with a male element of a split plug connector, similar to the ordinary Hubble Plug. This male element may be plugged into the female receptacle of any standard electric fitting and wired as for standard Welsbach thermostat.

Adjustment

To adjust temperature control—

(a) Loosen up adjusting lock nut.

(b) Turn adjusting screw clockwise to cut out, counter-clockwise to cut in. One turn clockwise will raise temperature setting by approximately 1°. Conversely, one turn counter-clockwise will decrease temperature setting by approximately 1° F. There is a temperature differential between cut-in and cut-out points of approximately 7° F., and no adjustment of this range is possible. In other words, if the cut-in temperature is decreased, the cut-out temperature is decreased by approximately the same amount.

(c) When proper setting is made, tighten adjustment lock nut.

When installing thermostats, care should be taken so that no sharp kinks are made in the capillary tube. If the bulb should lose its charge, the machine would fail to operate as the diaphragm would then be in the same position as shown in Fig. 2.

To remove the Bishop and Babcock thermostat, first remove the bulb from the sleeve on the tank, then draw bulb and tubing through the bushing in the back of the cabinet. This can be done without disturbing either lines of copper tubing.

Difficulties and Their Remedies

Moisture or Dirt in System

The presence of moisture or dirt in the Welsbach system is revealed by erratic operation, particularly of expansion valve, as indicated by unsteady or abnormal vacuum gauge readings.

Moisture in the system is apt to freeze as it passes through the expansion valve. The resulting ice restricts the flow of ethyl chloride. With ethyl chloride no longer flowing into the freezing unit, the freezing unit will warm up until the ice melts.

This alternate freezing and thawing will continue intermittently as long as moisture is present. It is indicated by a fluctuating vacuum.

Before the moisture freezes, the vacuum gauge will remain steady at its proper setting. As the moisture freezes, the gauge will show increasing vacuum, reading up to about 28 in. It will remain at this point only until the ice has thawed when it *will* drop back to normal.

To determine whether it is a stoppage due to dirt or excessive moisture in the system, it is only necessary to warm the expansion valve either with a rag dipped in hot water or by holding the hand against it.

With the equipment in operation, if the vacuum reading drops from 28 in. or higher to approximately normal value when the expansion valve is heated in this manner, then moisture is responsible for the trouble.

In a system with excessive moisture the vacuum at starting will usually be normal but rises suddenly to 28 in. or more after a few minutes operation. This rise of vacuum is caused by ice forming in the expansion valve and stopping the flow of refrigerant.

The presence of dirt or foreign matter in the system is likewise indicated at times by variable vacuum. Dirt however, is more apt to accumulate on the screen in the expansion valve, gradually restricting the flow of refrigerant and finally cutting it off entirely.

The presence of dirt in sufficient quantities to interfere with operation is first indicated by an increasing vacuum. When the screen is finally stopped entirely, the vacuum gauge reads about 28 in. and the tank will defrost.

Remedy for Moisture in System

If moisture has been circulating through the system, the only satisfactory remedy is to clean and dry the entire system thoroughly. This can best be done by washing the whole system out with alcohol and then removing the alcohol with refrigerant. The method to be used in cleansing the entire system with alcohol is described below in this article.

Remedy for Dirt in System

The remedy for dirt in the system is to remove both the expansion valve screen and the cartridge strainer in the liquid delivery line and wash same clean with alcohol.

When cleaning the screen and strainer, it is well to flush out the ¼-in. liquid line from the receiver. If dirt is circulating in the system, it will usually accumulate in the liquid receiver before being forced into the liquid delivery line and clogging either the cartridge strainer or expansion valve screen.

In blowing out this ¼-in. line, care should be taken that lubricant and refrigerant are not spilled on the cabinet. They will mar lacquer finish. If, in spite of your precautions, lubricant and refrigerant are blown against the cabinet, be sure to wipe clean and dry immediately.

In aggravated cases of dirt, the entire system should be washed with alcohol in the manner outlined below.

B & B Control

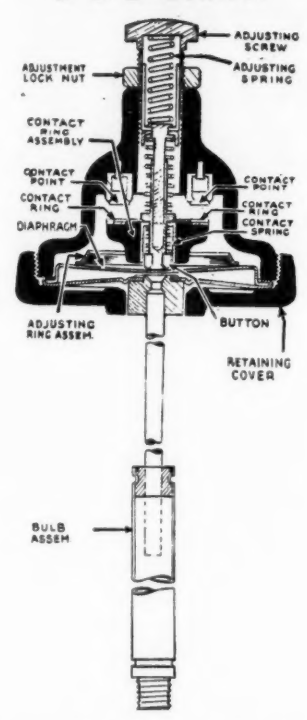


Fig. 2—Section of the Bishop & Babcock control used on some Welsbach models.

Overcharge of Refrigerant or Air in System

There are two conditions which can affect the temperature-pressure relationship of refrigerant in the Welsbach system.

The pressure will be abnormally high if there is air in the system and also if the system is overcharged with refrigerant. Properly charged and free from air, however, the pressure will never vary from the scale published in last week's issue of the NEWS.

With a temperature of 70° F. in the liquid receiver, the pressure will always be 6.2 lbs.; just as at a temperature of 80° F. the pressure will always be exactly 10.4 lbs.; at 90° F. always 15.4 lbs.; and at 100° F. always 21 lbs.

If your pressure at any given temperature exceeds the pressure shown for that temperature in the table, it proves that there is air in the system or that the system is overcharged.

In a system containing air, the pressure will be higher than normal for the receiver temperature when the machine is idle as well as when it is in operation.

If the high pressure is due to an excessive charge of refrigerant, filling the condenser tubes with liquid, the temperature-pressure relation will be normal when the machine is idle.

On starting the machine, however, the pressure will start to rise abnormally at once without a material increase in temperature.

In making a comparison between temperature and pressure, remember that it will take at least 10 and probably 15 minutes for the thermometer to show a true reading.

The thermometer should be placed in the well which is sunk into the receiver. The machine should be operating when this test is made, even if it is necessary to short-circuit the thermostat in order to maintain operation.

Always make this test when installing a machine. On the service report which you keep for later reference, be sure that the pressure and receiver temperature are noted.

Be sure that the test is repeated when you later inspect the installation. If at the time of installation you found the correct relation between temperature and pressure, this relation will be absolutely unchanged at the time of inspection if the system is free from leaks.

If the proper relation existed at the time of installation but no longer exists at time of inspection, it is definite proof that there is an air leak in the low pressure side of the system, allowing the pressure to build up on the condensing side of the system.

Whatever difference existed between the actual pressure found and the ideal pressure indicated in these tables will continue to exist without change if no air is admitted to the system.

If, for instance, when you leave an installation, the receiver temperature was 90° F. and the pressure, instead of being 15.4 lbs., was actually 17 lbs., there will always be a difference of 1.6 lbs. between the actual reading on that system and the pressure indicated in these tables.

If at any time this difference is more than 1.6 lbs. regardless of the temperature at which the pressure is taken, it is an indication that air has been introduced into the system since the earlier reading was made.

Use this test always. It enables you to leave a machine absolutely free from air.

Remedy for Overcharge of Refrigerant

If the system has too much refrigerant, the remedy is apparent: Remove the whole amount and recharge correctly, as described below in this article.

Remedy for Air in System (Locating Leaks)

Having determined that air is being introduced into the system, it becomes important not only that you find a point at which air is leaking in, but that you also determine positively that there are no other leaks.

It is impossible to find a leak unless the system is under pressure greater than that of the surrounding air.

To build up pressure, the following steps should be followed in order given:

1. Operate the machine with the vacuum gauge port and valve open.
2. Be sure that the pressure gauge is in place on the liquid receiver or the gauge port of the two-way condenser shut-off valve. (Do not install the pressure gauge in the lubricant separator chamber plug port).
3. Operate the machine until the pressure gauge reading approximates 50 lbs.
4. Shut down machine.
5. Close valve to pressure gauge port.
6. Transfer pressure gauge to the open vacuum gauge port.
7. Flush expansion valve by pushing down on adjusting stem, holding it down until the pressure gauge port indicates an equalization of pressure on both sides of the system by attaining a maximum reading, about 30 lbs.

It is immaterial whether or not the machine is charged with refrigerant when following the above procedure.

Every leak must be found and stopped. There must be no guess work. If the work is done thoroughly, a great deal of needless future trouble will be avoided.

When a machine which has been in service for some time becomes inoperative because of high pressure or loss of refrigerant, a leak exists. Unless it is found and remedied, the same trouble will recur again and again.

Knowing that a leak exists, the only sure way to find it is to test each joint and connection or possible point where air could leak into the system, or where refrigerant could leak out.

(*Concluded on Page 15, Column 1*)

How to Make the 'Zero Test', And Clean the System

(*Concluded from Page 14, Column 5*)

The surest test is to paint every connection or joint with a solution of soap and water sufficiently thick to insure the formation of a soap bubble where any air or gas is escaping.

Avoid the use of soap-water on the expansion valve bellows, however. A leak at this point will be revealed by bubbles through the Nujol with which the cup is normally filled, it being necessary to add Nujol if the cup is not brim full.

To make this solution of soap and water, use a plain white soap such as Ivory, Fairy, or similar toilet soaps. Use either flakes or fine shavings cut from the cake. Mix with water in a glass and apply with a small paint brush. Coat all joints and connections.

As you go over them with the brush, apply a flash light and be sure to use a mirror to make every part clearly visible to you. Do not neglect to use the mirror. You cannot possibly tell that a joint is tight unless you can see both front and rear. *Use a flash light, no flame!*

When you feel very sure that a leak no longer exists, subject the entire system to a rigid test by drawing a complete vacuum and allowing the compressor to discharge through liquid. This procedure, called the "Zero Test," is as follows:

Zero Test

1. Discharge all refrigerant from system (by procedure given later in this article).
2. Close condenser shut-off valve tightly, being sure that circulating valve at liquid receiver remains open and that all gauges have been removed.
3. Remove plug from lubricant separator chamber of compressor (or use gauge port when compressor is equipped with two-way condenser shut-off valve).
4. Insert a union (¼-in. pipe x ¼-in. S.A.E., or ⅛-in. pipe x ¼-in. S.A.E. when two-way condenser shut-off valve requires this fitting).
5. To this union attach a short length of ¼-in. copper tubing.
6. Connect this to a small piece of glass tubing by means of a rubber tube. When refrigerant is discharged there still remains some mixed up in the lubricant in the compressor, as well as some of the gaseous refrigerant in the coils. It is necessary therefore to:
7. Start the motor to allow compressor to run for 20 or 30 minutes to exhaust most of the remaining refrigerant from the system.
8. After the machine has run 20 or 30 minutes, as called for, place end of glass tube 2 in. below the surface of alcohol in a glass container. (Under no circumstances use anything but alcohol for this test).

The alcohol will absorb the small amount of gas that might still exist in the system, hence no bubbles will appear if the system is tight.

CAUTION: Alcohol will become saturated if the glass tube is placed in bottle before the initial 20 or 30 minute run.

If bubbles appear with regularity, a leak is indicated; if they appear at lengthening intervals, they are probably due to gas in the system. A service man should use his watch in this test. A system may not be considered perfectly tight until an interval of 25 minutes has lapsed without a bubble.

9. At the conclusion of the Zero Test, and prior to recharging the system, replace the plug in the two-way condenser shut-off valve or the lubricant separator chamber before shutting down the machine. (This will prevent air entering the system).
10. Then proceed as explained below for recharging the system with refrigerant.

This method will determine whether the system is tight excepting for the joints on the *high side* of the compressor. Leaks on the *high side* of the compressor can be detected only by using the soap bubble test on all parts, a procedure described above.

This applies to leaks at sylphon seal, the back bearing, the plug in lubricant separator chamber, the lubricant separator chamber head and its junction with the two-way condenser shut-off valve, as well as the condenser shut-off valve itself; also the discharge valve caps of cylinder heads and leaks due to imperfection in the body of the compressor itself.

A leak in the expansion coil underneath the surface of brine in the brine tank will not be revealed by bubbles in the Zero Test. If the leak is large, the compressor will pump liquid.

If a small leak in the expansion coil is suspected, proceed as for "Locating Leaks," by building up pressure on both sides of system, removing the filler cap from the brine tank and sealing the opening with a film of soapy water.

A leak in expansion coil will be revealed by a "soap bubble" at filler mouth. A small leak may be suspected if the odor of alcohol is detected when flushing out compressor for the Zero Test, or if the lubricant appears unusually thin, or moisture recurs often.

Elimination Test

In case the Zero Test reveals a leak that cannot be found by the soap bubble leak test, use the following "elimination test":

1. With the condenser shut-off valve closed as for the Zero Test and the glass tube still connected and immersed in alcohol:
2. Break ⅜-in. suction joint at compressor.
3. Cap suction fitting tightly.
4. Run Zero Test for 20 minutes as before. If no bubbles appear, the compressor can be considered tight and the leak must be located elsewhere.
5. Reconnect ⅜-in. suction line to compressor.
6. Break ⅜-in. line at suction union on brine tank.
7. After capping, run Zero Test for 20 minutes as before. If no leak is revealed, the compressor and first length of suction tubing are then known to be tight.

Subsequently: Test successively all joints until the appearance of bubbles indicates a leak in the last portion of the system tested, joints being found at:

⅜-in. connection of expansion valve to brine tank.

¼-in. connection of liquid line to expansion valve.

Both ends of cartridge strainer.

Two-way circulating valve at liquid receiver.

Liquid receiver connection to condenser.

Condenser connection to shut-off valve.

After locating a leak, it may be eliminated by replacement or otherwise, and the test should then be continued until all parts of the system are found to be tight.

When capping or plugging tubing for the elimination test, it is recommended that a cap be made from tubing by flaring one end of a short piece of tube and placing a flare nut thereon.

The other end of the tube should be flattened out with a hammer and *soldered*. If tube is not soldered, air will leak in. Do no use dead end caps that are supplied with parts for the protection of threads, as these will not pull up tight.

Cleaning System

If an accumulation of dirt clogs the expansion valve screen or cartridge strainer, or the lubricant seems to contain finely divided dirt, the system should be washed out with alcohol. The alcohol wash is also the only certain way of eliminating moisture from the system.

Use only formula No. 1 denatured alcohol, together with refrigerant and oil, as follows:

1. Discharge all refrigerant from the system by procedure outlined later. Throw this away.
2. Shut down machine.
3. Remove the ball, ball retainer and ball spring from the expansion valve.
4. Replace the bottom cap.
5. Remove nipple and strainer from expansion valve at connection with liquid delivery line.
6. Replace with a strainerless nipple.
7. Disconnect the ¼-in. liquid line at the cartridge strainer.
8. Slip a piece of rubber tubing over it.
9. Place the other end of the rubber tubing in a bottle containing two quarts of alcohol, so that the alcohol will be sucked up to the expansion valve when the pump is put in operation.
10. Remove the cartridge strainer
11. Fasten a piece of tubing on the ¼-in. liquid line connection of the receiver, placing the open end in the alcohol bottle (see 9). When new type receiver valve is used, it will be necessary to insert a ¼-in. bushing and ¼-in. S.A.E. fitting into the opening of the valve when the strainer is removed.
12. Operate the compressor. Both receiver valve and condenser shut-off valve should be open.
13. The alcohol will be drawn through the system to the compressor, pass through it, and into the condenser, flowing from it to the receiver, from which it will be discharged back into the bottle after dissolving the dirty lubricant and carrying away the dirt and any moisture that may be in the system.

To build up the pressure necessary to discharge the alcohol back into the bottle, pull the suction tubing out from under the surface of the alcohol intermittently—thus admitting air—and allow the alcohol to circulate until the color of the fluid being discharged is approximately the same as that being drawn in from the bottle.

Sometimes the alcohol will build up a high pressure in the compressor, causing it to pound and in some cases blow even when this precaution is occurs, shut down the machine for a half minute.

This will allow pressure to be released in compressor, preventing the blowing of seal. If the seal should blow even when this precaution is taken, it will not damage the seal, the seal will reseat itself.

When the seal blows, alcohol and lubricant are thrown all over the flywheel belt and machine compartment. Be sure to clean this up on completion of the job, otherwise odors and slipping belt will result.

14. Rinse the system with a quart of clean alcohol, this time being careful to avoid the admission of air. (In other words, keep suction tubing immersed in the alcohol).
15. Shut down machine just before the last of the alcohol is drawn from the bottle. Throw away any alcohol left in the bottle.
16. Start machine up after pouring a half pint of refrigerant into the bottle. This will build up pressure in the system, forcing the rinsing alcohol out. (If the discharge does not come out clear, rinse again with another quart of alcohol followed by a half pint of refrigerant).
17. Just before the last of the refrigerant is drawn into the system, place finger over the end of the suction tubing to prevent admission of air, and allow machine to operate until no more liquid discharges. (Never allow machine to operate with the suction end of tubing open after rinsing, as it is necessary to keep moist air out of the system.
18. Shut down machine before removing finger from end of suction tubing.
19. Reconnect system with a minimum of delay, thus keeping it as free as possible of atmospheric moisture.

The system is now clean and the strainerless expansion valve fitting should be replaced by a fitting with clean strainer. The expansion valve ball, ball retainer,and spring should be cleaned and reassembled in the expansion valve, and the ¼-in. liquid line re-connected, using a clean cartridge strainer.

Strainers can be cleaned by placing them in alcohol which will dissolve the dirt, the dissolved dirt being removed by blowing through the screen in the opposite direction to that from which the dirt entered.

20. Flush out compressor three times with new lubricant.
21. Test for leaks as outlined above.
22. Recheck by Zero Test.

NOTE: If non-freeze solution (brine) leaked into the system through a defective expansion coil in the brine tank, it is necessary to repair or replace the brine tank and then, *before cleaning system,* it is necessary to flush out the compressor once with new lubricant as per procedure, described later, and to recharge with lubricant.

A. Charging system with refrigerant.
B. Checking amount of refrigerant.
C. Discharging refrigerant.
D Purging system of air.

To accomplish any or all of the four acts as indicated above, proceed as follows:

1. Connect measuring bottle to the pressure gauge opening on receiver valve.
2. Remove plug on end of measuring bottle.
3. All valves of system should be open, excepting valve on vacuum gauge fitting. (When receiver is fitted with new style (Mueller type) valve, the valve should be opened only half way.)
4. Open valve of measuring bottle slowly.
5. Start up compressor and continue operation for five minutes after pressure in measuring bottle is released. This will evacuate all air from system and discharge all refrigerant into the measuring bottle.

(If condensing unit is exposed to temperatures below 54.5° F. it might be necessary to warm up the receiver by means of hot water and rags in order to build up a pressure sufficient to discharge the refrigerant).

6. With a flash light, look into the measuring bottle through the open end. A complete charge of 16 ounces of ethyl chloride will exactly fill the measuring bottle.
7. To recharge system, fill measuring bottle to top. Compressor should still be operating.
8. Replace plug on measuring bottle tightly.
9. Close circulating valve on receiver.
10. Observe frost on ⅜-in. line from expansion valve to brine tank. When frost disappears, it indicates that all the refrigerant has been discharged out of the filling bottle into the system.

Of course, if expansion valve is not set for normal vacuum this line might not frost. However, it will be cold as long as the refrigerant is passing through it. (Vacuum gauge will read 28 in. when full).

11. Close valve on bottle.
12. Open circulating valve on receiver.
13. Close valve to pressure gauge opening on receiver. Note: If new style (Mueller type) valve is used on receiver, operations 12 and 13 are accomplished simultaneously.
14. Remove measuring bottle.
15. Check up pressure-temperature relation and vacuum.

Purging (Emergency Method).

Another way of removing air from the system is by purging. This is not so certain as the above method and there is uncertainty as to the amount of charge left in the system when this method is used. It is, however, unnecessary in this case to have a measuring bottle.

Purging is most effective after the machine has been shut down for a while. It is accomplished by partially closing the two-way condenser shut-off valve and allowing a small amount of gas to escape through the gauge port (or by loosening the hold-down bolts of the lubricant separator chamber head when not equipped with a two-way condenser shut-off valve, in this case the valve remains open).

The escaping gas carries with it the air from the condenser. Do not break the flare joint at the condenser shut-off valve for purging. Do not permit liquid refrigerant to escape. This will occur if the gas escapes at too rapid a rate.

After purging, replace gauge plug (or tighten separator head), open condenser shut-off valve all the way and start machine. After 15 minutes take temperature-pressure reading and compare with table.

If pressure is more than 2 lbs. high, repeat purging operation.

Test for leaks at each connection disturbed for purging.

Method of Flushing Out Compressor

1. Close condenser shut-off valve.
2. Remove valve from compressor.
3. Remove back bearing plate and allow old lubricant to discharge.
4. Place clean rag over top of compressor.
5. Start up motor and allow machine to run.
6. Replace back bearing plate after all lubricant is discharged.
7. Pour fresh lubricant in top of compressor. It is not necessary to stop motor to do this.
8. Allow machine to run for a few minutes and then remove back bearing plate and discharge.
9. Repeat this three times to make sure that all alcohol is cleaned out of compressor.
10. After flushing out compressor, refill same with fresh lubricant to the level of the plug in the lubricant separator chamber of the compressor. When flushing is done following cleaning of system, it will be necessary to refill compressor with fresh lubricant up to the top of the lubricant separator chamber.

The procedure under "Difficulties and Their Remedies" up to this point covers the correction of conditions without a change of system parts or components.

Next the procedure incidental to a change of system parts is outlined.

To Change Compressor

1. Close two-way circulating valve on receiver.
2. Operate the compressor until as much refrigerant as possible is pumped over to the high side, as evidenced by an increase in vacuum to a 28-in. reading.
3. Shut off motor.
4. Close condenser shut-off valve on top of the compressor.
5. Remove rubber fabric belt.
6. Remove screws fastening the condenser shut-off valve to the lubricant separator chamber, being careful not to let the lubricant foam out on to the floor.
7. Remove ⅜-in. suction line at inlet valve on compressor.
8. Compressor leg bolts can now be taken out, pemitting the compressor to be removed.
9. To replace new compressor fasten down compressor leg bolts.
10. Reconnect ⅜-in. suction line.
11. Fasten down condenser shut-off valve; before doing this make sure that compressor is filled with lubricant to the level of the plug in the lubricant separator chamber.
12. Replace belt.
13. Leave valves closed and remove plug from top of condenser shut-off valve.
14. Start up compressor and pull Zero Test from receiver valve to compressor. (It will not be necessary to remove refrigerant in this case, as it is imprisoned in the receiver and condenser, both valves being closed).
15. If system is tight, replace plug in condenser shut-off valve, leaving motor running.
16. Open condenser shut-off valve.
17. Open receiver valve.
18. Check vacuum and pressure.

To Change Brine Tank

1. Siphon brine from tank and close valve on receiver.
2, 3, and 4. Same as instruction on changing compressor. (See above).
5. Disconnect joint at expansion valve.
6. Disconnect joint at bottom of brine tank.
7. Lift out brine tank.
8. Install new brine tank.
9. Reconnect joint at expansion valve.
10. Reconnect joint at bottom of brine tank.
11. Fill brine tank with non-freeze.
12. Remove thermostat from old brine tank and place on new tank.
13, 14, 15, 16, 17, and 18. Same as instruction on changing compressor. (See above).

To Change Expansion Valve

1, 2, 3, and 4. Same as instruction on changing compressor. (See above).
5. Disconnect ¼-in. line at expansion valve.
6. Disconnect ⅜-in. line at expansion valve.
7. Connect new expansion valve.
8. Fill expansion valve cup with Nujol.
9. Same as instruction (13, 14, 15, 16, 17, and 18) on changing compressor.

To Change Receiver or Condensing Coils

1. Discharge refrigerant. (Described above).
2. Disconnect receiver or condensing coils.
3. Reconnect new receiver or condensing coils.
4. Pull Zero Test.

To Change Condensing Unit

1, 2, 3, and 4. Same as instructions (1, 2, 3, and 4) on changing compressor.
5. Disconnect ¼-in.liquid line at receiver.
6. Disconnect ⅜-in. suction line at compressor.
7. Remove holding down bolts of condensing unit frame.
8. Entire condensing unit may be pulled through back of box.
9. Replace with new condensing unit.
10. Connect ⅜-in and ¼-in. lines.
11. Same as instructions (13, 14, 15, 16, 17, and 18) on changing compressor.

REAL PROPERTY INVENTORY TAKEN IN 12 MORE CITIES

WASHINGTON, D. C.- Data covering 12 more cities of the 63 cities included in the Real Property Inventory were recently given out by the Bureau of Foreign and Domestic Commerce. The tabulation is shown in detail on this page. Reports from 12 other cities were given in the May 23 issue. Following summaries for the individual cities cover information which should be of particular interest to the refrigeration industry.

Sioux Falls, S. D.

The reported 1930 census population of Sioux Falls, S. D., was 33,362. Families investigated under the inventory numbered 8,946.

Electricity was used for lighting in 9,028 dwellings and for cooking in 165. Mechanical refrigerators were found in 1,701 homes.

Asheville, N. C.

According to the 1930 census, the population of Asheville, N. C., was 50,193 persons. A total of 11,134 families were questioned by inventory investigators.

Dwellings making use of electricity for lighting totaled 10,139, while cooking by electricity was reported for 815. Homes equipped with mechanical refrigerators numbered 2,013.

Frederick, Md.

Frederick, Md., had 14,434 inhabitants in the 1930 census. According to the inventory the population was made up of 3 694 families.

Lighting by electricity was reported for 3,321 homes and cooking by electricity was shown for 170. Mechanical refrigerators were used in 764 dwellings.

Albuquerque, N. M.

Albuquerque, N. M., with a 1930 census population of 26,570 had 7,223 families according to the inventory report.

Homes employing electricity for lighting numbered 6,865, while cooking was done by electricity in only 64. Dwellings with mechanical refrigerators were shown as 1,124.

Baton Rouge, La.

In the 1930 census, Baton Rouge, La., was shown to have a population of 30,729 persons. Families surveyed under inventory coverage were 7,196 in number.

Electrically lighted dwellings were reported at 5,379 and electricity was used for cooking in only 10. Of the homes surveyed, 999 had mechanical refrigerators.

Shreveport, La.

Population of Shreveport, La., was 76,655 persons in the 1930 census. Inventory records showed this total to be composed of 20,206 families.

Dwellings lighted by electricity were 15,691, and cooking by electricity was shown for 1,785. Mechanical refrigerators were found in 2,208 homes.

Austin, Tex.

Inhabitants of Austin, Tex., numbered 53,120 according to records of the 1930 census. A total of 14,011 families were covered by the inventory.

Homes lighted by electricity were found to be 11,321, and those in which cooking was done by the same medium were only 41 in number. Use of mechanical refrigerators was reported for 2,166 dwellings.

Pueblo, Colo.

The population of Pueblo, Colo., was listed as 50,096 in the 1930 census returns. Reports by inventory investigators showed 11,672 families in the city.

Homes lighted by electricity were given as 11,539 and those using electricity for cooking amounted to 1,464. The number of dwellings having mechanical refrigerators was 1,593.

Oklahoma City, Okla.

Census returns in 1930 gave Oklahoma City, Okla., 185,389 inhabitants, and the recent study made by the inventory covered 47,804 family groups.

Dwelling units lighted by electricity were reported as 43,155, and cooking by electricity was shown for only 103 of the homes included in the survey Residences owning mechanical refrigerators totaled 11,795.

Phoenix, Ariz.

In the city of Phoenix, Ariz., with a population of 48,118, according to the 1930 census, inventory enumerators reported 13,365 families.

Of homes surveyed, 13,182 had electric lighting facilities, and only 98 employed electricity for cooking. Dwellings in which mechanical refrigerators were in use numbered 2,909.

Decatur, Ill.

Residents of Decatur, Ill., were 57,510 in number according to the 1930 census reports. The inventory showed this population to be made up of 15,416 families.

Electricity was used as means of lighting in 15,164 homes, and but 28 were reported as cooking by electricity. Homes equipped with mechanical refrigerators numbered 2,330.

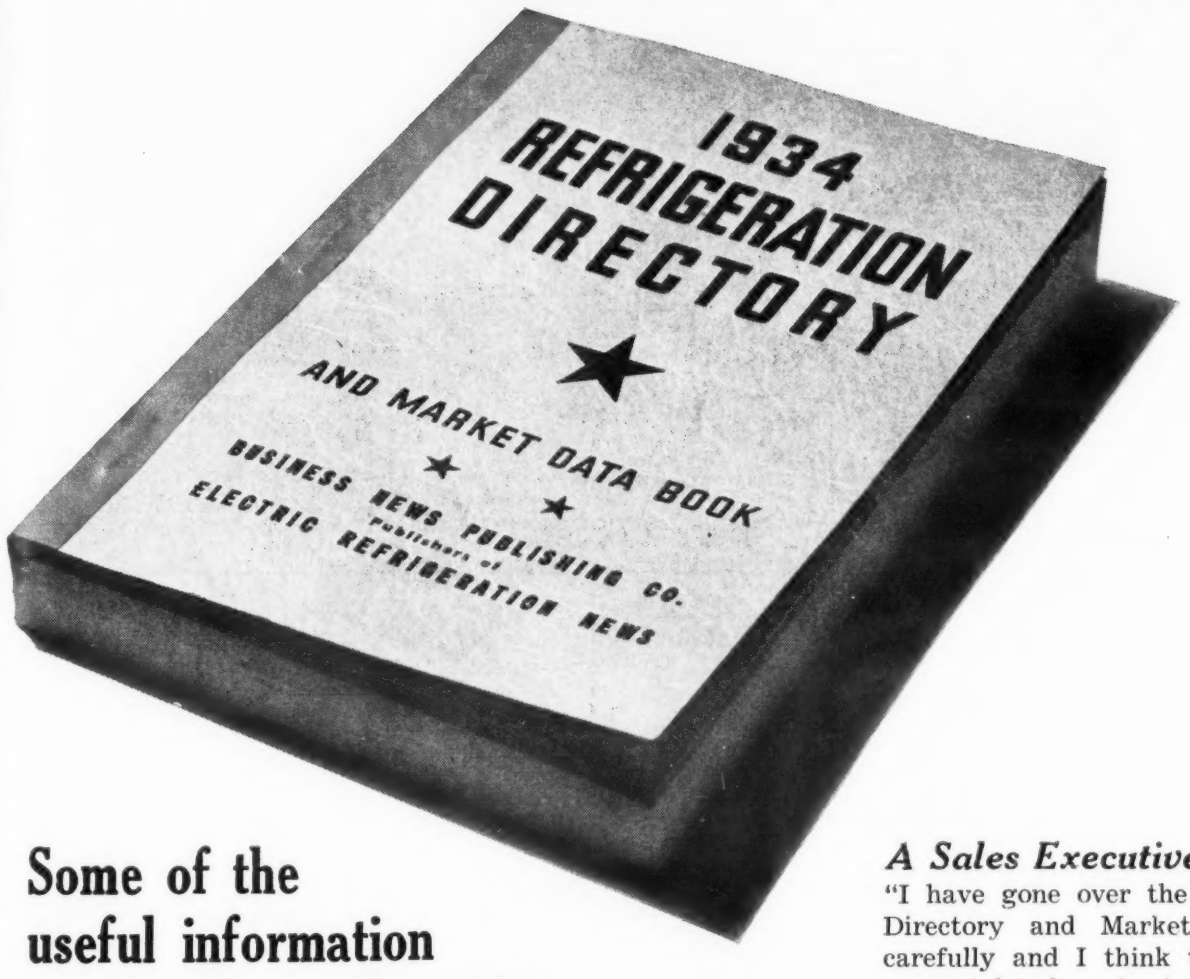
Fargo, N. D.

Population records from the 1930 census show 28,619 persons for Fargo, N. D., while inventory reports give the city 6,993 families.

The number of homes lighted by electricity totaled 7,276, and those using electricity for cooking numbered only 15. Mechanical refrigerators were being used in 1,929 homes.

	Sioux Falls, S. D.	Asheville, N. C.	Frederick, Md.	Albuquerque, N. M.	Baton Rouge, La.	Shreveport, La.	Austin, Tex.	Pueblo, Colo.	Oklahoma City, Okla.	Phoenix, Ariz.	Decatur, Ill.	Fargo, N. D.
TYPE OF DWELLING Number of Structures												
Single family	6,633	9,857	1,687	5,832	6,416	18,214	11,819	9,956	35,056	8,667	13,732	4,258
2 family	534	464	651	383	357	1,082	639	444	3,141	1,194	468	489
3 family	19	32	51	5	5	13	29	27	69	7	20	20
4 family	75	98	20	35	32	165	108	94	630	108	56	47
Row house	6	13	51	29	17	17	7	29	20	172	6	2
Apartment	79	73	11	48	17	47	50	77	450	113	86	118
Other dwelling	215	296	164	126	107	184	197	255	727	258	294	275
Total structures	7,561	10,833	2,635	6,458	6,951	19,722	12,849	10,882	40,093	10,519	14,662	5,209
TYPE OF DWELLING Number of Dwelling Units												
Single family	6,633	9,857	1,687	5,832	6,416	18,214	11,819	9,956	35,056	8,667	13,732	4,258
2 family	1,068	928	1,302	766	714	2,164	1,278	888	6,282	2,388	936	978
3 family	57	96	153	15	15	39	87	81	207	21	60	60
4 family	300	392	80	140	128	660	432	376	2,520	432	224	188
Row house	19	44	211	168	106	105	41	147	75	733	20	14
Apartment	611	698	70	485	127	370	327	727	4,170	1,200	740	1,116
Other dwelling	552	569	282	414	186	320	423	548	1,404	951	695	853
Total dwelling units	9,240	12,584	3,785	7,820	7,692	21,872	14,407	12,723	49,714	14,392	16,407	7,467
AGE OF STRUCTURES												
0- 4 years	313	220	71	804	373	1,134	2,277	482	8,330	1,209	470	403
5- 9 years	1,107	3,511	248	1,490	1,158	4,384	2,283	1,622	10,631	3,018	3,181	747
10-14 years	1,167	1,583	143	1,114	1,478	5,148	1,540	1,073	7,397	1,960	1,776	700
15-19 years	1,181	1,262	165	746	1,240	3,048	1,391	740	4,519	1,469	1,399	764
20-24 years	808	1,107	195	673	942	2,402	1,234	952	4,159	1,227	1,619	584
25-29 years	570	716	127	552	499	1,216	881	960	2,724	455	1,084	514
30-34 years	624	961	250	445	856	1,725	1,416	1,910	1,737	760	1,534	608
35-39 years	352	366	139	206	86	206	149	813	223	128	639	347
40-49 years	708	708	262	246	167	298	818	1,530	212	184	1,535	414
50-74 years	194	345	504	119	98	124	500	620	8	37	1,279	82
75 years and over	8	15	501	23	17	4	48	13	2	1	36	2
Not reported	29	...	30	40	37	33	12	167	151	71	110	44
CONDITION OF STRUCTURES												
Good	3,109	2,989	1,175	2,972	2,140	7,344	5,046	4,107	17,048	3,038	4,439	2,202
Need minor repairs	3,292	4,952	1,200	2,354	3,423	9,984	4,929	4,690	16,338	5,167	7,458	2,161
Need structural repairs	1,078	2,449	239	1,030	1,226	2,171	2,471	1,796	5,663	1,849	2,564	637
Unfit for habitation (some inhabited)	73	421	18	94	134	220	396	237	912	437	260	154
Not reported	9	....	3	8	28	3	4	52	132	28	41	55
MATERIAL OF CONSTRUCTION												
Wood	6,747	8,793	615	2,026	6712	18,756	11,309	5,608	31,247	3,354	13,139	4,135
Brick	188	1,041	1,876	1,085	96	648	693	3,005	7,590	3,196	1,363	166
Stone	26	44	21	75	2	2	119	72	57	23	4	6
Concrete	90	228	57	53	17	15	27	24	91	350	35	17
Stucco	460	599	61	1,647	110	295	680	2,049	621	3,417	90	828
Other	38	108	4	1,533	3	4	20	97	376	150	16	12
Not reported	12	....	1	9	11	2	1	27	111	29	15	45
GARAGE AND AUTOMOBILES												
With garage	5,237	5,571	887	4,553	3,351	9,282	8,479	7,425	28,044	6,451	9,748	3,508
Without garage	2,304	5,233	1,742	1,883	3,576	10,405	4,353	3,393	11,868	3,995	4,857	1,649
Not reported	20	....	6	22	24	35	17	64	181	73	57	52
Car capacity	6,735	7,437	1,655	5,571	4,245	14,096	11,233	8,696	39,301	8,487	12,580	4,776
Number of automobiles	5,889	5,113	2,182	4,798	3,678	9,948	9,294	7,163	32,908	8,592	8,617	4,196
DWELLING UNITS												
Total dwelling units	9,240	12,584	3,785	7,820	7,692	21,872	14,407	12,723	49,714	14,392	16,407	7,467
Number of rental units (includes vacant units for rent)	5,232	....	2,176	4,627	5,296	14,839	8,240	6,817	31,444	10,302	9,202	4,734
No. occupied by owner	4,008	....	1,609	3,193	2,396	7,033	6,167	5,906	18 270	4,090	7,205	2,733
Occupied dwelling units	8,946	....	3,694	7,223	7,196	20,206	14,011	11,672	47,804	13,365	15,416	6,993
Vacant dwelling units	294	....	91	597	496	1,666	396	1,051	1 910	1,027	991	474
Vacancy ratio	3.6%	....	2.4%	7.6%	6.4%	7.5%	2.7%	8.2%	3.8%	7.1%	6.6%	6.3%
No. of extra families (sharing dwelling with usual occupants)	522	1,390	325	259	529	2,082	1,543	596	5,643	670	1,188	242
Total families	....	12,539	....	.. .	....	....	....	....	....	....	....	....
RACE AND FAMILIES												
White families	8,909	8,192	3,371	6,932	4,801	12,020	10,608	10,846	45,946	11,706	14,886	6,961
Families of other races	32	2,950	312	274	2,369	8.170	3,393	756	1,833	1,622	468	17
Families, of race not reported	5	7	11	17	26	16	10	70	25	37	62	15
MONTHLY RENTAL												
Under $10	232	2.975	303	814	1.223	5,824	1,945	1,972	5,029	2,321	1,546	224
$10.00 to $14.99	723	2,170	547	612	1,158	2,873	1,378	1,659	5,818	2,118	2,350	507
$15.00 to $19.99	978	1,234	477	7.23	619	1,600	1,078	1,086	5,361	1.788	2,128	602
$20.00 to $29.99	1.773	1.475	514	1,343	1,090	2,463	1,746	1,081	7,885	2.074	1,994	1,340
$30.00 to $49.99	1,335	838	269	982	908	1,751	1,561	489	5,388	1,367	753	1,744
$50 00 to $74.99	141	194	24	104	136	169	327	32	683	330	114	264
$75.00 and over	9	81	5	16	13	30	42	4	56	101	8	15
Not reported	41	....	37	33	149	129	163	494	37	203	309	38
DURATION OF OCCUPANCY												
0- 5 months	2,142	3,000	563	2,128	1,507	4,694	3,715	2,405	14,373	5,287	3,109	1,713
6-11 months	948	1,447	231	847	830	2,636	1,432	1,166	6,415	1,597	1,560	741
1 year	983	1,463	314	695	846	2,517	1,466	1,051	5,726	1,300	1,576	780
2 years	676	813	237	447	442	1,379	901	647	3,560	735	953	544
3-4 years	1,876	997	390	823	710	2,195	1,477	1,196	3,626	1,173	1,350	701
5-9 years	1,299	1,642	683	1,090	1,169	3,212	2,080	2,127	6,535	1,671	2,909	1,028
10-19 years	1,477	1,212	670	843	1,150	2,712	1,788	2,049	4,505	1,158	2,514	1,045
20 years and over	541	560	494	332	408	830	1,135	903	962	382	1,332	433
Not reported	4	...	12	18	134	31	17	128	102	62	113	8
Total occupied dwelling units	8,946	....	3,694	7,223	7,196	20,206	14,011	11,672	47,804	13,365	15,416	6,993
DURATION OF VACANCY												
0-5 months	211	742	43	442	253	908	225	363	1,380	620	465	270
6-11 months	34	204	11	88	66	299	64	145	247	173	128	78
1 year	24	203	1	31	37	212	37	114	102	114	138	42
2 years and over	13	271	15	25	40	211	23	280	84	96	124	32
Not reported	12	...	21	11	100	36	47	119	97	24	136	52
Total vacant dwelling units	294	1,450	91	597	496	1,666	396	1,051	1,910	1,027	991	474
NUMBER OF ROOMS												
1	348	1,169	17	282	64	118	314	378	1,723	475	186	347
2	766	851	87	946	341	1,984	1,124	1,091	5,545	1,763	770	869
3	950	1,317	266	1,524	2,131	6,448	2,321	1,696	7,381	3,433	1,149	1,009
4	1,336	2,204	443	1,829	1,264	3,683	3,250	3,132	10,429	3,251	2,564	1,023
5	2,375	2,419	502	1,861	1,494	3,962	3,973	3,464	12,507	2,699	5,881	1,642
6	1,742	2,540	1,563	835	1,389	3,185	1,709	1,536	6,540	1,628	2,860	1,259
7	910	1,151	318	237	481	1,088	721	658	1,959	568	1,408	657
8	475	971	283	149	246	719	438	344	1,459	242	968	330
9 and over	327	952	283	138	213	670	528	301	1,155	294	527	258
Not reported	11	....	18	19	69	15	29	123	16	39	94	47
EXTENT OF CROWDING												
Very spacious	2,392	3,409	1,598	1,550	1,459	4,671	3,331	3,455	11,049	3,810	5,300	1,387
Spacious	2,224	2,669	392	1,782	1,962	5,272	3,323	2,753	11,380	3,573	4,929	1,746
Adequate	2,561	2,878	748	1,947	2,087	5,534	3,608	3,259	15,300	3,438	3,898	2,173
Crowded	1,575	1,986	426	1,516	1,480	4,237	3,032	1,914	9,956	2,067	2,011	1,495
Overcrowded	143	148	16	273	179	407	506	168	1,451	317	90	142
Greatly overcrowded	45	40	2	99	19	63	193	48	604	107	19	32
Not reported	6	....	12	26	10	22	18	75	64	53	69	28
TYPE OF HEATING APPARATUS												
Warm air furnace	6,208	2,273	460	2,010	19	3	358	4,115	2,471	823	10.597	3,491
Steam or vapor	668	1,782	1,534	740	60	44	57	821	1,264	636	983	1,005
Hot water	494	1,093	320	347	338	14	8	333	80	176	872	1,994
Heating stove	1,789	6,391	1,455	4,113	3,829	21,262	13,704	7,155	44,434	11,926	3,807	842
Other	70	1,019	9	591	2,830	290	249	175	1,306	691	95	116
None	5	19	1	13	539	244	13	42	40	127	15	7
Not reported	6	....	6	6	77	15	18	82	119	13	38	12
FUEL USED FOR HEATING												
Coal	7,882	12,306	3,644	5,631	1,738	36	237	11,915	3,039	5,022	15,888	6,441
Wood	101	175	91	478	1,670	1,372	5,512	75	3,950	6,794	29	41
Gas	725	1	0	1,592	3,598	20,264	8,430	518	41,968	442	226	4
Oil	473	43	38	90	61	1	66	39	104	989	151	933
Other	46	25	4	11	56	5	130	27	164	847	35	14
None	....	....	0	12	475	183	13	37	19	117	67	....
Not reported	13	....	8	6	94	11	19	112	470	181	11	29
RUNNING WATER												
Cold	2,344	4,116	1,418	1,032	4,550	7,454	5,507	2,740	5,080	4,668	3,591	628
Hot and cold	6,238	7,838	2,235	5,905	2,610	11,733	6,447	8,863	36,113	8,773	11,305	6,454
No running water	650	623	125	878	486	2,675	2,435	1,050	8,792	936	1,460	361
Not reported	8	....	7	5	46	10	18	70	29	15	51	24
LIGHTING FACILITIES												
Gas	9	1	9	8	....	74	2	11	399	18	14	3
Electricity	9,028	10,139	3,321	6,865	5,379	15,691	11,321	11,539	43,155	13,182	15,164	7,276
Other or none	192	2,434	437	928	2,142	6,068	3,052	1,033	6,114	1,137	1,081	129
Not reported	11	....	18	19	171	39	32	140	46	55	148	59
COOKING												
Gas	7,446	2,261	1,701	4,741	4,279	20,044	9,290	4,613	43,096	10,955	12,950	6,186
Electricity	165	815	170	64	10	6	11	1,464	103	98	28	15
Other or none	1,618	9,498	1,896	2,396	3,232	1,785	5,043	6,465	6,470	3,285	3,278	1,202
Not reported	11	....	18	19	171	37	33	181	45	54	151	64
PRIVATE INDOOR WATER CLOSETS												
None	1,658	1,958	1,762	2,041	1.240	6,728	3,822	3,817	14,911	2,158	3,163	1,033
1	7,078	9,005	1,837	5,544	5,978	14,330	9,659	8,493	32,080	11,673	12,064	5,831
2	432	1,148	135	180	311	628	694	166	1,374	425	926	464
3 and over	56	466	26	36	54	121	207	28	293	92	144	71
Not reported	16	....	25	19	109	55	25	219	56	44	110	68
TUBS AND/OR SHOWERS												
None	2.372	3,446	1,517	2,291	2.227	9,436	3,944	4,080	13,506	2,543	4,440	1,408
1	6,716	8,044	2,167	5,329	5,024	11,700	9,726	8,268	34,848	11,410	11,503	5,813
2	120	863	65	155	290	590	578	116	1,108	324	294	146
3 and over	16	221	20	25	39	90	133	23	183	63	53	31
Not reported	16	....	16	20	112	56	26	236	69	42	117	69
MISCELLANEOUS												
Mechanical refrigeration	1,701	2,013	764	1,124	999	2,208	2,166	1,593	11,795	2,909	2,330	1,929
Vegetable garden in 1933	3,970	3,312	1,181	193	1,089	3,472	1,777	4,321	13,763	185	7,081	2,566

What Others Say about the 1934 Refrigeration Directory



Some of the useful information contained in the 692 pages of the 1934 Refrigeration Directory and Market Data Book

Alphabetical Section
Names and addresses of all companies which sell products or services to the refrigeration industry, listed alphabetically

Trade Name Section
Alphabetical listing of all trade names of refrigeration products or equipment identified with the product and name and address of the manufacturer.

Geographical Section
Names and addresses of manufacturers together with executive personnel, telephone number, branch offices, and products, listed by states and cities.

Classified Products Section
Products and services sold by or used by the refrigeration industry listed alphabetically in related groups with names and addresses of manufacturers.

Specifications Section
Specifications of all standard models of all makes of household and commercial refrigerators in related groups listed alphabetically by trade names.

Statistical Section
Surveys of distribution channels and merchandising activity. Air-conditioning installations. Sales of electric refrigerators and companion merchandise. U. S. Census figures, exports, survey of wired homes and potential markets, etc.

Dealer Surveys—1933
Distribution channels--Analysis of 1933 sales of electric refrigerators according to type and location of dealers.

Merchandising Activity—Analysis of electric refrigeration dealers with respect to lines of merchandise sold.

Air-Conditioning Survey
A study of installations in 12 large cities up to Jan. 1, 1934.

Household and Commercial Refrigeration Sales
An analysis of sales by months for 1933 and previous years.

Wired Homes and Potential Markets
Figures for all towns in United States of 2,500 population and over.

Review Section
Developments of the electric refrigeration industry—a brief summary of products and marketing methods.

A review of electric refrigeration news in 1933—an interpretative digest of trends and events.

Engineering progress in electric refrigeration.

A Distributor Says:
"The 1934 Refrigeration Directory is, without doubt, the most complete directory that we have ever received. The information contained therein is very valuable to anyone connected with the refrigeration industry, and we recommend it highly to anybody." A. S. Pent, Sam S. Glauber, Inc., New York, N. Y.

A Vice President Says:
"The new 1934 Refrigeration Directory and Market Data Book is not only one of the most interesting ever published on an industry, but one of the most complete and helpful books of its kind I have ever seen." H. C. Bonfig, vice president in charge of sales, General Household Utilities Co., Chicago, Ill.

A Newspaper Man Says:
"We are in receipt of the 1934 Refrigeration Directory and Market Data Book. From careful examination of the contents, the book seems most complete. It is a book that should be invaluable to any person or company that has any interest whatsoever in the refrigeration industry." Harold E. Middleton, national advertising, The Des Moines Register and Tribune, Des Moines, Iowa.

A Sales Executive Says:
"I have gone over the 1934 Refrigeration Directory and Market Data Book very carefully and I think that you are to be congratulated on having compiled such an excellent summary of refrigerator experience. You may rest assured that I will keep this Directory close at hand for continual reference." R. C. Cosgrove, manager, household refrigeration sales, Westinghouse Electric & Mfg. Co., Mansfield, Ohio.

A President Says:
"We are sure the new 1934 Refrigeration Directory and Market Data Book will be very useful to us. You and your organization are to be congratulated." G. M. Johnston, president, Universal Cooler Corp., Detroit, Mich.

An Association Secretary Says:
"Our examination of the new 1934 Directory indicates that it is much more comprehensive than the previous issue, that the information is presented in a more convenient form. The great amount of attention you have given to industry statistics increases the value of the Directory to the point where we feel a copy should be in the hands of every executive in any way interested in, or connected with the refrigeration field." Paul H. Sullivan, executive secretary, Commercial Refrigerator Manufacturers Association, Chicago, Ill.

An Advertising Salesman Says:
"The 1934 Refrigeration Directory and Market Data Book constitutes in my opinion one of the outstanding contributions to the industry and is a most desirable work of reference." Fred S. Hale, Rodney E. Boone Organization, New York, N. Y.

A Consulting Engineer Says:
"I glanced through the 1934 Refrigeration Directory and Market Data Book. You have done an excellent job and should be complimented on your contribution to the trade." George B. Bright, George B. Bright Co., Detroit, Mich.

A Sales Manager Says:
"I find right now the most valuable part of the Refrigeration Directory is the statistical information regarding performance of the industry during the past years, and regarding market potential. We, of course, have all of this information, but it is scattered all over the shop. The fact that you have condensed it is great." Chas. R. D'Olive, refrigeration sales manager, Stewart-Warner Corp., Chicago, Ill.

A Public Utility Official Says:
"In glancing through the 1934 Refrigeration Directory I became so much interested in it that I have had it carefully reviewed, and the reviewer agrees with me that this is a particularly valuable publication on refrigeration and its allied manufacturers. Its coverage is certainly complete, the statistical value particularly useful, and the review section is quite interesting." B. E. Fisher, vice president in charge of public relations and sales, Pacific Gas & Electric Co., San Francisco, Calif.

A Government Statistician Says:
"We have many calls for refrigeration data and the other statistics which are contained in your Directory. You may count upon us for any data that we have available for your use. Your publication fills a long-felt want." Z. R. Pettet, chief statistician for agriculture, Department of Commerce, Bureau of the Census, Washington, D. C.

Business News Publishing Co.
5229 Cass Ave., Detroit, Mich. Date 1934

☐ Send me the 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK. $3.00 enclosed.
☐ Enter my subscription to ELECTRIC REFRIGERATION NEWS for one year. $3.00 enclosed.
☐ Enclosed find $5.00, the combination rate for both the NEWS and the DIRECTORY. ☐ Send bill.

Name .....

Attention of / In Care of .....

Street Address .....

City and State .....

We sell the ..... refrigerator and .....
(Please indicate other products or principal line of business.)

The above rates apply only to United States and Possessions and Pan-American Postal Union Countries. Rate for Canada—Directory, $6.00; News, $6.00; Combination, $11.00. Rate for all other foreign countries—Directory, $5.00; News, $5.00; Combination, $9.00. Group rates for Directory—5 copies, $2.75 per copy; 10 copies, $2.50 per copy; 20 copies, $2.25 per copy.

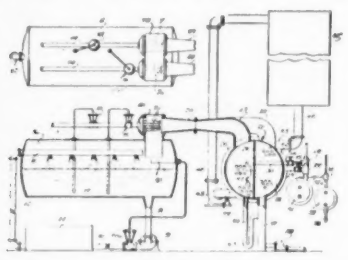
5-20-34.

PATENTS

Issued June 5, 1934

1,961,212. REFRIGERATING APPARATUS. Harold M. Graham, Buffalo, N. Y., assignor to Ross Heater & Mfg. Co., Inc., Buffalo, N. Y., a corporation of New York. Application June 29, 1933. Serial No. 678,203. 11 Claims. (Cl. 62—152.)

1. The combination with refrigerating apparatus, of equipment for cooling the refrigerating medium which is circulated



1,961,212

through said apparatus including a chamber through which said refrigerating medium is circulated, a steam ejector for evacuating said chamber to lower the temperature of the refrigerating medium as it passes therethrough, means for condensing the steam discharged from said ejector and means, operative upon said last named means becoming inoperative to such a degree that a back flow of steam into said chamber is likely to result, for stopping the circulation of the refrigerating medium through said apparatus.

1,961,297. REFRIGERATING SYSTEM. Abraham Katzow, Indianapolis, Ind. Application Oct. 23, 1931. Serial No. 570,671. 1 Claim. (Cl. 62—119.)

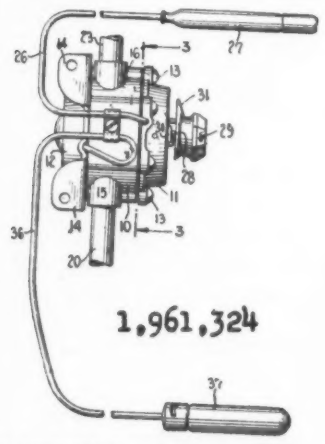
In a refrigerator of the absorption type, a heater, an absorber, a rectifier at a level higher than the heater, a pipe connecting the vapor-space of the heater with the lower part of the rectifier, a condenser having an inlet connected with the vapor-space of the rectifier, an evaporator, means interposed between said condenser and said evaporator for maintaining a pressure differential therebetween, a pipe connecting the vapor-space of the evaporator with the absorber, a pipe connecting the lower region of the absorber with the heater and forming a liquid seal between the absorber and heater with a gravity head against the heater, and a pipe forming a communication between the absorber and the heater, the inlet of said last-mentioned pipe having a siphon connection with a region of the heater below minimum liquid level therein, said system having a rarified atmosphere below normal atmospheric pressure and containing a volume of refrigerant which is liquid at atmospheric temperatures and pressures, and a liquid absorbent for said refrigerant, of less volume than the total capacity of the system.

1,961,298. LIQUEFIER SCREW COVER. Thomas F. Lundy, Tulsa, Okla., assignor to CO_2 Appliance Co., Tulsa, Okla. Application Aug. 14, 1933. Serial No. 685,128. 8 Claims. (Cl. 62—91.5.)

2. A liquefier comprising an upper section having a closed lower end, a lower section having an open upper end, and in which the upper end of the lower section receives a convexed end of the upper section in annular channel conforming to the curvature of the curved lower end of the upper section.

1,961,324. GAS VALVE. Sven W. E. Andersson, New York, N. Y., assignor to Electrolux Servel Corp., New York, N. Y., a corporation of Delaware. Application Feb. 15, 1932. Serial No. 592,977. 9 Claims. (Cl. 236—92.)

1. A device for controlling the flow of gas to the burner of a gas flame heated refrigerating apparatus of the absorption



1,961,324

type comprising a casing enclosing a fluid tight chamber having inlet and outlet openings adapted to be connected to the gas supply and burner respectively, a valve controlling one of said openings, means within said chamber for operating said valve responsive to the evaporator temperature, a normally open valve controlling the other of said openings, and temperature responsive means operative to close said valve upon a predetermined rise in temperature of the generator.

1,961,325. AUTOMATIC BURNER CONTROL VALVE. Sven W. E. Andersson, New York, N. Y., assignor to Electrolux Servel Corp., New York, N. Y., a corporation of Delaware. Application Nov. 28, 1932. Serial No. 644,595. 4 Claims. (Cl. 236—99.)

5. In a gas burner, a gas inlet valve, a gas tight casing forming a gas inlet chamber around said valve and having a flexible wall portion, a gas supply connection to said chamber, a lever without said chamber movable to operate said valve through said flexible wall portion, a thermostat for operating said lever, and stops for limiting the movement of said lever.

1,961,337. VEGETABLE-CONDITIONING METHOD AND MACHINE. Robert L. Cornell, Sanford, Fla. Application June 5, 1933. Serial No. 674,429. 3 Claims. (Cl. 62—104.)

1. The method of washing and cooling food materials, consisting in causing the food materials to float in a flowing body of cool water while in contact with the water and counter to the direction of flow of the water while a part of the food materials protrude above the water, causing precooled water to shower the protruding parts of the food materials and to pass thence down into said flowing body for adding thereto and causing it to continue to flow, trapping a part of the water that has washed and cooled the food materials, elevating and re-cooling a part of the trapped water, and re-showering the food materials with the re-cooled water while the food materials remain in said body of cool water.

1,961,361. REFRIGERATOR. Martin Hokanson, Duluth, Minn. Application March 19, 1931. Serial No. 523,782. 11 Claims. (Cl. 62—46.)

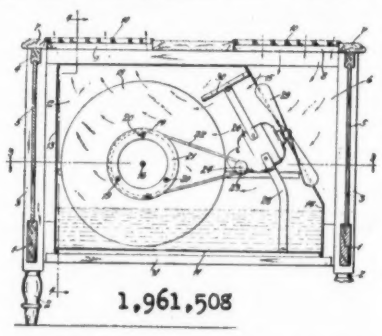
1. A refrigerator having a food chamber, a cooling and humidifying chamber and a refrigerant chamber, a fabricated rack for the refrigerant composed of a plurality of depending spaced baffles cooperatively connected with reinforcing spaced strips, said baffles extending within the cooling and humidifying chamber whereby to augment cooling and humidifying in said chamber.

1,961,495. REFRIGERATOR CASE. George J. Hopkins, Kendallville, Ind., assignor to McCray Refrigerating Co., Kendallville, Ind., a corporation of Indiana. Application June 2, 1933. Serial No. 675,075. 2 Claims. (Cl. 62—89.5.)

1. In a display refrigerator case having dual spaced panes of glass defining an inter-glass space, frame work forming a reservoir below the inter-glass space and in communication with the interior of the refrigerator, communicating means between the lower side only of the inter-glass space and the reservoir whereby the differential in vapor tension effects a flow of air to the interior of the refrigerator, and refrigerating means within the refrigerator.

1,961,508. HUMIDIFIER. Lawrence M. Persons, Clayton, Mo., assignor to The Emerson Electric Mfg. Co., St. Louis, Mo., a corporation of Missouri. Application March 6, 1931. Serial No. 520,522. 2 Claims. (Cl. 261—92.)

1. A portable humidifier comprising a portable cabinet having an air inlet passage near one end and an air outlet passage near its opposite end, a water re-

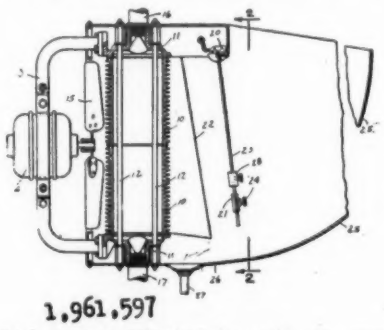


1,961,508

ceptacle having an inclined end wall provided with an opening, means for removably supporting said water receptacle in said cabinet in position in which said opening through said inclined end wall is adjacent to said inlet passage and in position in which the opposite end of the receptacle opens toward said outlet passage, a blower supported in an inclined position in said opening through said end wall, a series of rotary discs, means for supporting said discs for rotation in said cabinet between said blower and the opposite end of said receptacle in position in which air driven by said blower must pass between said discs toward said outlet opening, and a motor supported between said blower and said discs in said water receptacle for operating said blower and said discs simultaneously.

1,961,597. REGULATOR FOR REFRIGERATIVE SYSTEMS. John Roland, Indianapolis, Ind., assignor, by mesne assignments, to General Fire Extinguisher Co., Providence, R. I. a corporation of Delaware. Application March 30, 1931. Serial No. 526,217. 11 Claims. (Cl. 62—115.)

1. A refrigerative system comprising a heat exchange element, means for conducting refrigerant to and from said ele-



1,961,597

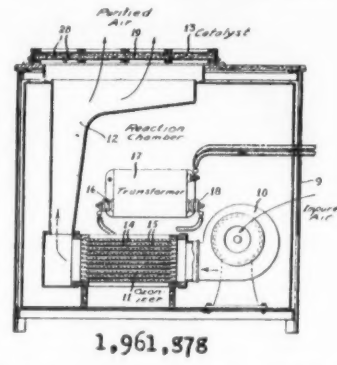
ment, means actuated by said air movement for controlling the refrigerant conducting means and means for confining the air flow after passing said element to maintain its velocity beyond the surface thereof whereby the air will carry free moisture off the element.

1,961,799. AIR COOLING DEVICE. Joseph Stark, Bronx, N. Y. Application Aug. 12, 1932. Serial No. 628,453. 4 Claims. (Cl. 261—103.)

1. In an air cooling device, a casing having an upper opening, a motor driven suction pump in said casing, a wind box, a turbine wind wheel operated from said motor to drive air through said wind box, a chamber above said wind box, a plurality of frames, pieces of moisture absorbing material spread between bars of the said frames, said frames exchangeably supported in notch elements in said chamber, a pipe having a plurality of nozzles arranged in said chamber above the frames, a water tank, a pump, pipe connections between said tank and said pump, and between the said pump and the nozzles through which the water is pumped to moisten the material held in said frames, said chamber having a plurality of water collecting grooves in its bottom and a nozzle through which the surplus of water collected in said grooves is returned into said tank, and a felt lined cover over the said upper opening through which moistened air is driven by the operation of said wind wheel into a room to be cooled.

1,961,878. REMOVAL OF TOBACCO SMOKE FROM AIR. William K. Gilkey, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a corporation of Delaware. Application Feb. 10, 1932. Serial No. 592,201. 4 Claims. (Cl. 23—4.)

1. The method of purifying air laden with tobacco smoke which comprises subjecting the air to the action of ozone and



1,961,878

thereafter to the action of a catalyst capable of restoring the ozone to oxygen.

1,961,888. INSULATING STRUCTURE. Harvey B. Lindsay, Evanston, Ill., assignor to Dry Zero Corp., Chicago, Ill., a corporation of Delaware. Application July 25, 1930. Serial No. 470,732. 1 Claim. (Cl. 154—44.)

An insulating structure comprising, in combination: a core of insulating material; a covering for said core formed of a blank initially coated with permanently tacky asphalt upon its core engaging side; said blank comprising a body portion to cover the opposite sides and one edge of said core, and lapping edge and corner tabs providing an integral covering over each corner of the core; said tacky coating providing self-sealing characteristics to said lapped tabs, and adhesion to the core.

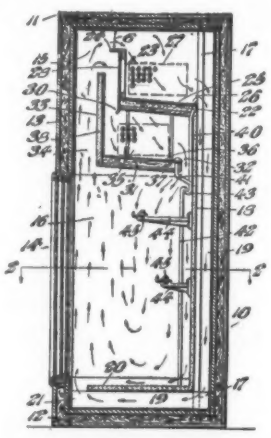
1,961,889. ICE MANUFACTURING SYSTEM. Joseph A. Martocello, Sr., Philadelphia, Pa. Application June 29, 1931. Serial No. 545,650. 6 Claims. (Cl. 62—172.)

1,961,890. REFRIGERATION PROCESS. Ernest B. Miller and Gerald C. Connolly, Baltimore, Md., assignors, by mesne assignments, to Chester F. Hockley, receiver for The Silica Gel Corp., Baltimore, Md., a corporation of Maryland. No Drawing. Application Aug. 14, 1931. Serial No. 557,196. 16 Claims. (Cl. 62—179.)

1. A method of refrigeration consisting in evaporating liquid amo and adsorbing the gaseous amo, in the substantial absence of permanent gases, in an adsorbent consisting of a solid porous material impregnated with substances capable of combining with said amo to form amo compounds, one of said substances yielding a solid amo compound and another of said substances a liquid amo compound.

1,961,901. REFRIGERATING DISPLAY CASE. William Ellis Hill, Glenside, Pa., assignor of one-half to Frank H. Borden, Philadelphia, Pa. Application June 3, 1932. Serial No. 615,095. 8 Claims. (Cl. 62—89.6.)

1. In a show case, a primary cooling unit, means defining a channel from said unit down and across said case, a second-



1,961,901

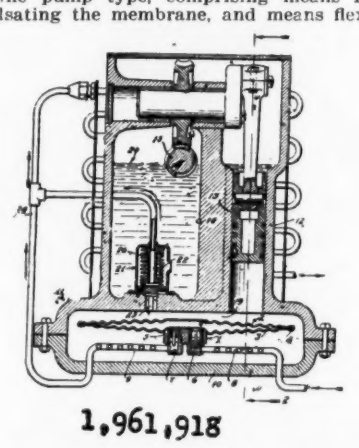
ary cooling unit, means defining a channel spaced from said first mentioned channel for a secondary cooling airstream, and means defining a channel common to both said streams.

1,961,904. LATCH FOR REFRIGERATOR DOORS. Frederick Meyer, Buffalo, N. Y., assignor to Meyer Body Co., Inc., Buffalo, N. Y., a corporation of New York. Application June 21, 1932. Serial No. 613,440. 9 Claims. (Cl. 292—228.)

6. A latch for holding two relatively movable members in engagement with one another, by engaging a catch mounted on one of said members, comprising a spring latch mounted on the other of said members and adapted to engage and be caught by said catch, and a manually operable lever pivoted adjacent said latch and having a cam face adapted to engage said latch and force it into firmer engagement with said catch and thereby draw said relatively movable members into firm engagement with one another, said cam face in the opposite extreme positions of said lever being free from said latch.

1,961,918. COMPRESSOR STRUCTURE. Frank R. West, Highland Park, Mich. Application June 24, 1930. Serial No. 463,503. 11 Claims. (Cl. 230—49.)

1. A refrigerant compressor of the membrane pump type, comprising means for pulsating the membrane, and means flexi-



1,961,918

bly supporting said membrane pump to permit bodily movement of the same during said pulsating action.

1,962,098. AUTOMATIC CONTROL FOR AIR CONDITIONING DEVICES. Glenn F. Zellhoefer, Bloomington, Ill., assignor to Williams Oil-O-Matic Heating Corp., Bloomington, Ill., a corporation of Illinois. Application July 25, 1932. Serial No. 624,461. 1 Claim. (Cl. 236—44.)

A control for an electrically operated humidifying device for buildings including a switch in the operating circuit within the building having a fixed contact and a movable contact, an arm pivoted therebelow carrying the movable contact, a moisture responsive element carried on said arm and held at one end thereof with the other end free to move as the element expands or contracts in accordance with the moisture content of the surrounding air, an adjustable abutment adapted to be engaged by the free end of said element, a spring acting to rotate the arm about its pivot in the direction of the fixed contact and maintaining the engagement of the free end of said element against the abutment, said abutment including an adjustable stud and a pivoted temperature actuated lever having one end interposed between said stud and free end of said moisture responsive element, a hollow contractible and expansive member fixed at one end and mounting a reciprocable rod on the movable end having an operating connection with the free end of said pivoted lever, and a bulb located exterior of the said building connected to the interior of said contractible and expansive member containing a substance responsive to temperature changes to contract or expand said member, whereby contraction of said member delays the closing of the switch.

QUESTIONS

Commercial Specifications

No. 1673 (Manufacturer, New York)—"Recently ELECTRIC REFRIGERATION NEWS carried a series of tables covering the outputs of various makes of compressors for commercial refrigeration.

"Could you send me a copy of the particular issue carrying these tables or a photostat of the same. I will be glad to pay any charges incurred."

Answer: Commercial machine specifications were published in the March 14 issue of ELECTRIC REFRIGERATION NEWS, and also in the 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK.

Socold

No. 1674 (Service man, Massachusetts)—"Could you furnish me with any data on the Socold unit? Is this job still being made? Do you know where I can get any information concerning it? I am interested in knowing what gas is used, and any available information about the compressor."

Answer: This refrigerator went off the market in 1928 or 1929. It was manufactured by the Socold Refrigerating Corp. with offices in Boston and Lynn, Mass. The refrigerant used was sulphur dioxide.

We have no data on the Socold compressor. Does any reader know where we could secure a Socold service manual for our files?

Refrigerator Accessories

No. 1675 (Distributor, South Africa)—"We are anxious to get in touch with various manufacturers of refrigerator accessories such as vegetable freshenator pans, food savers, water bottles, containers, odor absorbers, trays and any other gadgets for cabinet type of refrigerators which can now be obtained."

Answer: Manufacturers of refrigerator dishes, vegetable pans, water bottles and other refrigerator accessories are listed in the 1934 REFRIGERATION DIRECTORY beginning on page 278.

Refrigerator Thermometers

No. 1676 (Manufacturer, Indiana)—"From your files of specifications for refrigerators can you give us the name or names of all manufacturers who are including thermometer inside the cabinet as standard equipment? This would be separate and apart from any automatic defrosting arrangement."

Answer: According to the specifications of household electric refrigerators in the May 30 issue of ELECTRIC REFRIGERATION NEWS O'Keefe and Merritt. 3700 E. Ninth St., Los Angeles, is the only company which includes inside thermometers in latest models.

Kling Tite Stapler

No. 1677 (Manufacturer, Pennsylvania)—"Will you be good enough to advise us the makers of the door gasket stapler having the trade name 'Kling Tite Automatic Stapler'."

Answer: A. L. Hanson Mfg. Co. 5047 Ravenswood Ave., Chicago, Ill.

Non-Electric Refrigerators

No. 1678 (Colorado)—"Can you tell if there is any refrigerator besides the Electrolux that does not use gas or electricity. What I am interested in is a refrigerator that uses gasoline or kerosene so that it could be used in the country where there is no electricity or gas, or no electric plants.

"I understood the Crosley people used to make a machine of this kind but their dealer here does not seem to know if they do or not. Would appreciate it if you could let me know."

No. 1679 (Hardware Merchant, New York)—"Please send us a list of refrigerators that use oil and advise us as to whom we should get in touch with to get further information about them."

Answer: Electrolux manufactured by Electrolux Refrigerator Sales, Inc., Evansville, Ind., is furnished in both kerosene and gas-operated models. The Kerounit made by Gibson Electric Refrigerator Corp., Greenville, Mich., burns kerosene as does Superfex which is manufactured by Perfection Stove Co., 7609 Platt Ave., Cleveland, O. The Icy-Ball made by Crosley Radio Corp., Arlington Ave., Cincinnati, O., is also an absorbtion-type refrigerator.

Waukesha Motor Co., Waukesha, Wis., has recently placed on the market a refrigerator which is operated by means of a gasoline engine.

Dehydrating Ovens

No. 1680 (Manufacturer, Pennsylvania)—"Will you please give us the names and addresses of manufacturers of ovens for baking and dehydrating electric refrigeration compressors and coils."

Answer: See page 243 of the 1934 REFRIGERATION DIRECTORY for manufacturers of dehydrating ovens.

Solid Rubber Door Gaskets

No. 1681 (Manufacturer, Oregon)—"Will you be kind enough to give us the names of the different manufacturers of pure rubber gasket strips, such as are used on refrigerator cases and household electrical boxes.

"We are not particularly interested in the rubberized gasket with the cotton interior, but we want to locate some manufacturers who make the solid rubber gasket strips."

Answer: The following manufacturers can supply rubber door gaskets for use on household and commercial refrigerator cabinets:

American Hard Rubber Co.
11 Mercer St., New York, N. Y.
Jarrow Products Corp.
143 Austin Ave., W., Chicago, Ill.
Miller Rubber Products Co.
S. High St., Akron, O.

May Refrigerator Sales

No. 1682 (Advertising Agency, Cincinnati)—"I wonder if you have available this early, figures on the unit sales for the month of May of the various electric refrigerator manufacturers.

"I seem to recall that I have seen these figures published regularly in ELECTRIC REFRIGERATION NEWS, and would appreciate very much having them just as soon as they are available."

Answer: Individual sales figures are not released by the various manufacturers. Sales by all members of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) appear regularly in ELECTRIC REFRIGERATION NEWS, the monthly bulletins being published as soon as released. Sales figures for May will not be available for about two weeks.

Refrigeration Parts

No. 1683 (Dealer, Texas)—"Will you please furnish us a list of all the manufacturers and wholesalers of refrigeration parts as we are adding a parts department to our business."

Answer: The 1934 REFRIGERATION DIRECTORY lists manufacturers of refrigeration parts, supplies and accessories as well as leading suppliers of replacement parts.

G-E Refrigerator Dishes

No. 1684 (Dealer, Florida)—"Kindly advise us where we can purchase the refrigerator dishes furnished as standard equipment in the General Electric refrigerator."

Answer: Refrigerator dishes used in General Electric refrigerators can be purchased from General Electric distributors. Distributor for Florida is G. S. Patterson, Inc., Times Bldg., St. Petersburg, Fla.

Refrigerator Manufacturers

No. 1685 (Publisher, New York)—"We are anxious to have our electric refrigerator listing up to date and shall therefore appreciate it very much if you will kindly make such additions and corrections to the listings herewith as will enable us to have it so."

Answer: Manufacturers of household electric refrigerators are listed in the 1934 REFRIGERATION DIRECTORY beginning on page 262.

Ice Cream Freezers & Water Chillers

No. 1686 (Exporter, New York)—"We are anxious to obtain the names of suppliers concerning several refrigerator items.

"First, we would like to make inquiry regarding a device for making ice cream mechanically within an electric refrigerator, and presumably a motor-operated affair which would draw its current from the box lighting outlet. We understand that the Easy-Way Co. of Chicago, Ill., manufactures such a device, but we would like to have other names if possible.

"Second, we have a definite inquiry for a two gallon water chiller for use within electric refrigerators. We know of some manufacturers of such devices, but none of them manufacture a unit of two gallon capacity."

Answer: Easy-Way Co., 435 Marquette Rd., Chicago, manufactures an electric motor-driven ice cream freezer which operates inside the evaporator of an electric refrigerator. Also try S. M. Howes Co., 511 Medford St., Boston, Mass., and Louisville Electric Mfg. Co., Inc., 31st & Magazine Sts., Louisville, Ky.

Two gallon water chillers of the round type can be obtained from Owens-Illinois Glass Co., 965 Wall St., Toledo, Ohio. This company will also make flat type water chillers of this size on special order.

Compensating Salesmen

No. 1687 (Dealer, West Virginia)—"Please advise us as to what the cost of operating a refrigeration department should be; also what commission salesmen are being paid to sell refrigerators on the outside."

Answer: Articles on "How to Compensate Salesmen" were published in the Nov. 16, 1932, and Aug. 31, 1932, issues of ELECTRIC REFRIGERATION NEWS.

General industry practice is to pay commission salesmen a straight 10 per cent commission on the delivered price of the equipment. Some dealers offer an extra incentive to salesmen by setting a quota and giving the salesmen an extra 1 or 2 per cent on all his sales if he makes the quota.

Recently a group of Georgia dealers, in making a protest to President Roosevelt on the TVA appliance program, declared that the cost of doing business is between 30 and 35 per cent of the gross dollar volume of sales.

Commercial Unit

No. 1688 (College, Massachusetts)—"Mr. R. S. Boyle of B.&L. Engineering Co., Akron, Ohio, has referred me to your company for names of manufacturers who might be able to furnish me with a refrigerator unit to meet my requirements.

"I wish a unit to take care of a refrigerator with capacity of 630 cu. ft. and I prefer to use sulphur dioxide as the refrigerant.

"I shall appreciate receiving the names of any manufacturers that can furnish me with a unit of this kind."

Answer: According to the specifications of commercial refrigerating machines given in the 1934 REFRIGERATION DIRECTORY the following companies make sulphur dioxide units capable of serving a refrigerator of 630 cu. ft. capacity:

Curtis Mfg. Co.
1936 Keinlen Ave., St. Louis, Mo.
Frigidaire Corp., Dayton, Ohio.
Parker Mfg. Co.
2625 Santa Fe Ave., Los Angeles, Calif.
General Electric Co.
Nela Park, Cleveland, Ohio.
Kelvinator Sales Corp.
14250 Plymouth Rd., Detroit, Mich.
Trupar Mfg. Co.
140 Davis St., Dayton, Ohio.
Starr Co., Richmond, Ind.
Westinghouse Electric & Mfg. Co.
Mansfield, Ohio.

Cement Sealing Material

No. 1689 (Store outfitter, Missouri)—"We would appreciate receiving the names of manufacturers who can supply us with cement sealing material for setting glass in meat display cases. We do not find any such listing in your 1934 REFRIGERATION DIRECTORY."

Answer: Sealing compounds for setting glass in display cases can be obtained from the following manufacturers:

Armstrong Cork & Insulation Co.
917 Concord St., Lancaster, Pa.
American Hard Rubber Co.
11 Mercer St., New York, N. Y.
Flintkote Co., RCA Bldg., New York, N. Y.
Miller Rubber Products Co.
S High St., Akron, Ohio.
Technical Products Co.
2308 Main St. (Sharpsburg P.O.)
Pittsburgh, Pa.

Ice Cream Recipes

No. 1690 (Manufacturer, Pennsylvania)—"We appreciate very much your letter of May 23, giving us the address of the Easy-Way Co. in Chicago.

"We have been endeavoring to get a good ice cream recipe, and have found a book published by Daly Brothers, Schenectady, N. Y., entitled 'What Every Ice Cream Dealer Should Know.' This contains some valuable information, but as it apparently was issued about 1913 or 1914, we were wondering if there is a more recent issue of this book, or a similar book."

Answer: Borden Sales, Inc., 350 Madison Ave., New York City, publishes a book of recipes for ice cream. A number of refrigerator manufacturers have published recipe books for use by their dealers and distributors.

Refrigeration Handbook

No. 1691 (Service company, Maryland)—"Your DIRECTORY is a 'Godsend' to the service man for finding parts.

"Now please tell me where I can find a small hand book, something that is used by refrigeration engineers, like an engineer would use *Marks'*, for getting data of ice meltage, boiling points of gases, the interchange of heat when a liquid changes to a gas, and so on."

Answer: The *Refrigeration Data Book*, published by the American Society of Refrigerating Engineers, 37 W. 39th St., New York City, is a handbook of technical information. The most recent edition of this book, 1932-1933, is now available at $3.50 per copy.

Karlberg Parts

Answer to Query No. 1657 (June 5 issue, page 23): Karlberg seal rings are manufactured by A. E. Karlberg, Trico Compressor Service, 42 N. Paulina St., Chicago, Ill.

CLASSIFIED

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REFRIGERATOR SALESMEN wanted throughout the United States to see repossessed and rebuilt electric refrigerators for one of the largest wholesale jobbers in America. Territories and repeat commissions granted to those who qualify. Substantial earnings possible. Box 628.

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GUARANTEED thermostat repair service. B and B, G. E., Cutler-Hammer, Penn, Ranco, Tag., etc. Regrind and polish float valve needles ten cents per needle, $1.00 minimum charge. Expansion valves repaired. Gas service, Methyl, Ethyl, Sulphur, Iso-butane and others. Any amount, your cylinder or ours. Competitive prices. Halectric Laboratory, 1793 Lakeview Road, Cleveland, Ohio.

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You can profitably use this column to tell Refrigeration Manufacturers who you are and where you are. Write for special rates for service companies.